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FLIGHT

MAGAZINE

OCTOBER 1956
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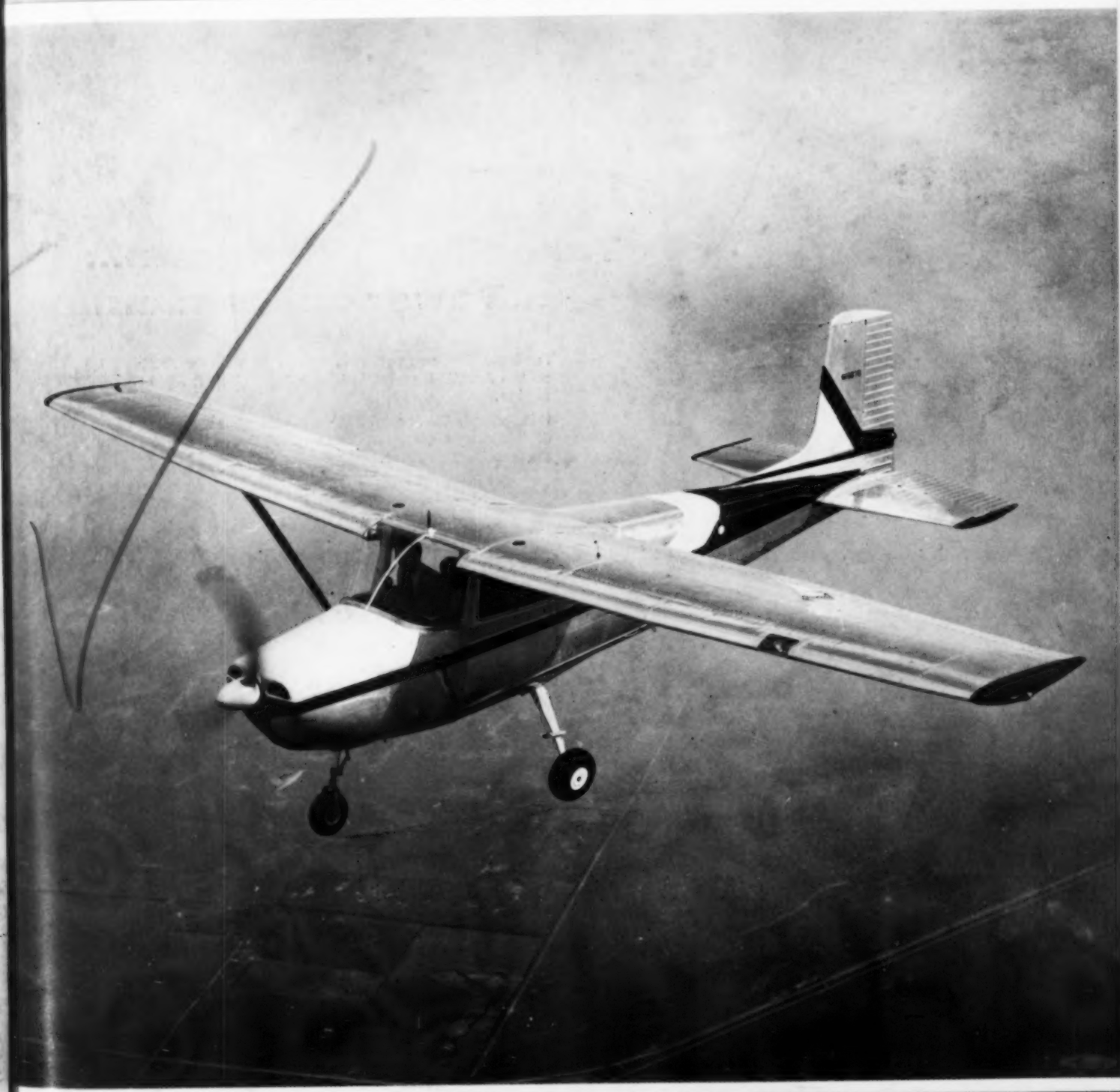
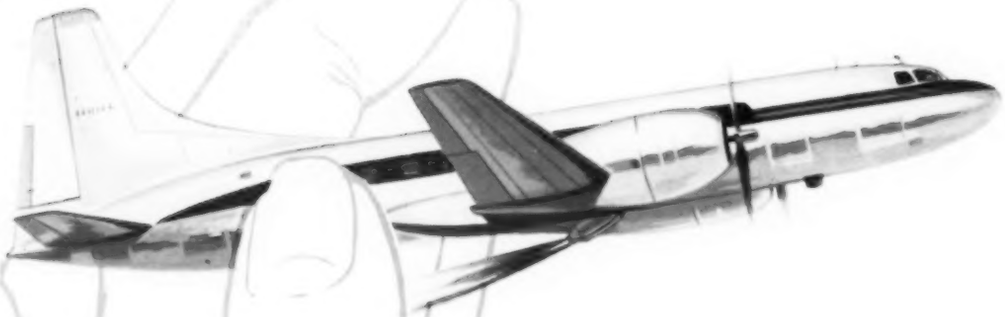


1957 CESSNA MODEL 172



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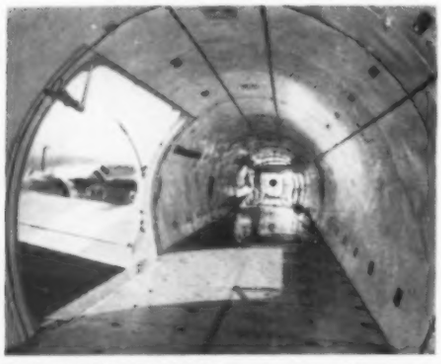

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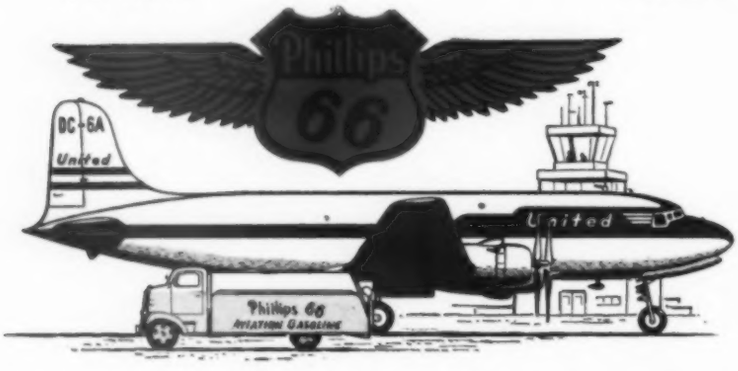

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AIR Report
Significant Trends and News

BIGGEST RECENT DEVELOPMENT IN CESSNA GO-AHEAD FOR 4-ENGINE MODEL 620 is the hiring of Guy Miller as director of sales for the pressurized, $375,000 business transport. Miller has been in the Beech sales department as Super 18 sales specialist and is widely popular in business transport circles. An oldtimer, Miller moved into his new Cessna office on Oct. 1 and began organizing special 4-engine sales and service plans for the new airplane. For newest details of the Model 620, see page 24.

FIRST REVERSIBLE PROPELLERS FOR SMALL TWINS are being evaluated by Aero Design on the Aero Commander, giving this airplane another important "first" in business plane development progress. Braking on the ground by reverse pitch adds significantly to the airplane's utility by increasing safety with short stops on icy or wet runways and on short fields. Ground handling is facilitated because reversing enables the Commander to back up. At 6,000-lb. gross, a Commander using reverse-pitch can be decelerated from 90-mph. velocity on landing within only 400 ft. The new propeller is the electrically-controlled Hartzell HC83F-3A. To reverse on landing, throttles are closed and then both reverse switches are actuated, causing reversing immediately the throttles are opened. The blades move into a reverse position angle of minus 25 degrees. It is said they cannot be reversed until the throttles are completely closed and the aircraft is on the ground, and that they will not reverse in flight even if the reverse actuators are energized.

NEW 4-PL. BELLANCA CRUISEMASTER WITH 205-MPH. CRUISING SPEED is now being produced and marketed by Northern Aircraft, Inc., Alexandria, Minnesota, at $15,792 with initial production scheduled at one airplane per week. Roy Strong, president of the new firm, says the Cruisemaster has been improved and is now the world's fastest single-engine executive plane in production. It is powered by a 6-cylinder, Continental 0-470K engine rated at 230 hp. at 2,600 rpm., and is said to have a 220-mph. top speed and 205-mph. cruise speed at 75% hp., with a 46-mph. stall speed, 1,250 fpm. rate of climb, 20,000-ft. service ceiling, 55.5-gal. fuel capacity, and 1,070-lb. useful load at a gross weight of 2,700 lbs. It is the same design as was produced by Bellanca until the end of the Korean War but has a new nose cowl, a new hydraulic power pack for simpler maintenance, an improved hydraulic system which retracts the gear in only two seconds, new cabin heating system and improved soundproofing.

BUSINESS PLANE DELIVERIES BY 7 MANUFACTURERS for the first 8 months of 1956 topped the 4,600 unit mark at the end of August, indicating total 1956 deliveries will pass the 5,600-plane mark at the end of December. August shipments totalled 608 airplanes, with billings totalling $10,104,000, a 31% gain over July shipments of 465 planes billed at $8,049,000. These figures, obtained from Joseph T. Gueting, Jr., manager of the Aircraft Industries Association's Utility Airplane Council, show the following January-August deliveries by makes and models: Aero Design 99, including 58 Model 680's and 41 Model 560A's; Beech 526, including 349 Bonanzas, 7 D18's, 72 E18's, 93 Twin-Bonanzas and 5 Model 45 Mentors for export; Call Air 13 Model A4's; Cessna 2,315, including 70 Model 170B, 965 Model 172, 424 Model 180, 682 Model 182, 5 Model 195B, 167 Model 310 and 2 Model 325 (L-19 civilian); Mooney 55, including 46 Mark 20 and 9 Model M18C; Piper 1,620, including 495 Super Cub, 828 Pacer and Tri-Pacer and 297 Apache, and Taylorcraft 24 Model 20.

CESSNA'S JANUARY-AUGUST

(Continued on page 47)

FLIGHT MAGAZINE

OCTOBER, 1956 VOL. 45, No. 10

THIS MONTH'S COVER features the 1957 version of the 4-place, 145-hp. Cessna Model 172. It was introduced to the public at the end of September by 230 sales outlets, each having received delivery of a new demonstrator for the promotion. Over 1,100 Model 172's were produced in 1956. See page 39 for details of the new model. —(Cessna Photo.)

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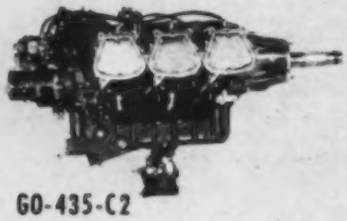
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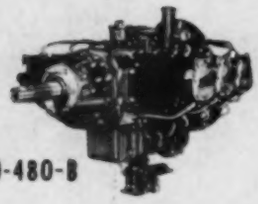
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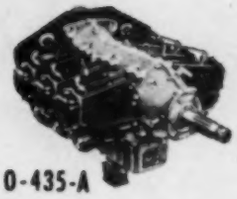
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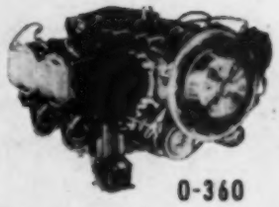
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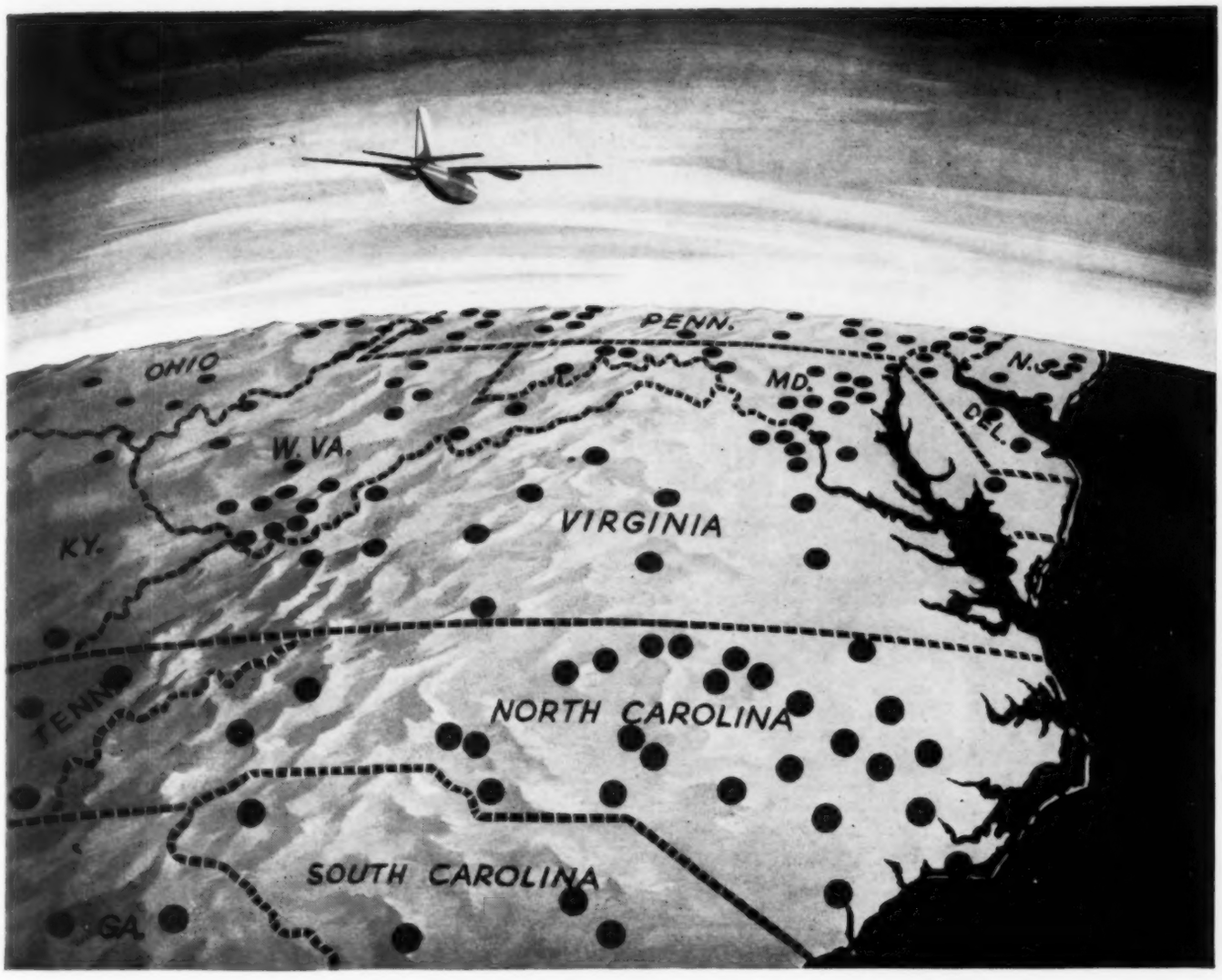

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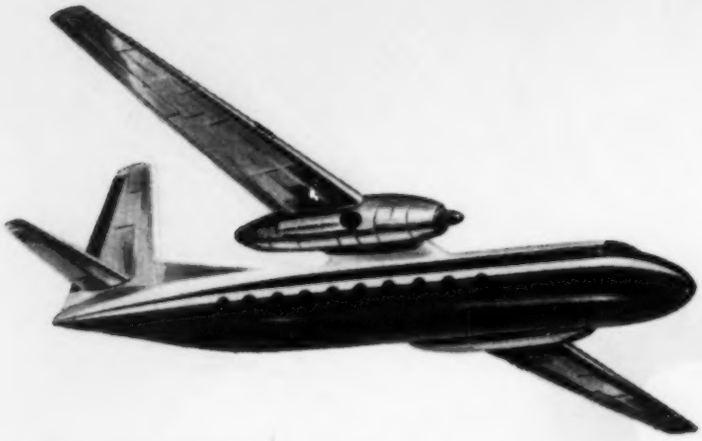

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McCord's Aero Service
Hickory
Cannon Aviation Co., Inc.
Wilson
Wilson Air Service and Sales

NORTH DAKOTA
Bismarck
Capital Aviation Corp.
Bowman
Wokal Flying Service

OHIO
Bowling Green
Vaughan Flying Service
Chesapeake
Huntington Airport, Inc.
Cincinnati
Cincinnati Aircraft
Columbus
Lane Aviation Corporation

OHIO *(Continued)*
Cuyahoga Falls
Repair and Sales Depot, Inc.
Dayton
Dayton Aircraft Sales Company
Defiance
Zelair
Lima
Lima Aviation Corporation
Magnolia
Magnolia Airport
Mansfield
Richland Aviation, Inc.
New Philadelphia
Tuscarawas County Aviation
North Benton
Miller Flying Service
Piqua
Piqua Aircraft
Sandusky
Sky Tours, Inc.
Steubenville
Steubenville Aero Service
Willoughby
General Aviation, Inc.
Zanesville
Southeastern Ohio Air Service, Inc.

OKLAHOMA
Ardmore
Ardmore Air Service
Miami
Miami Aircraft, Inc.
Muskogee
Sam's Flying Service
Oklahoma City
Sky Service, Inc.
Shawnee
Air Service, Inc.
Tulsa
Yingling Aircraft of Oklahoma, Inc.

OREGON
Eugene
Shirley's Air Service

OREGON *(Continued)*
Klamath Falls
Liston Aircraft
Medford
Rogue Flying Service
Pendleton
Pendleton Skyways, Inc.
Portland
Skyways, Inc.
Prineville
Dick Ballantine Flying Service, Inc.

PENNSYLVANIA
Allentown
Lehigh Aircraft Company, Inc.
Beaver
Alfred B. Bennett
Bedford
Blair-Bedford Airways, Inc.
Bristol
Engle Flying Service, Inc.
Fairview
Erie County Flying Service
Forty Fort
Smith Flying Service
New Cumberland
L. B. Smith Aircraft Corp. of Penn.

RHODE ISLAND
Warwick
Jennings Brothers Air Service, Inc.

SOUTH CAROLINA
Anderson
Carolina Aero Service
Greenville
American Aviation Service

SOUTH DAKOTA
Aberdeen
Aberdeen Flying Service
Sioux Falls
Hubbard Aviation, Inc.
Watertown
Hubbard Aviation Company

TENNESSEE
Chattanooga
Aircraft Sales & Service Company
Memphis
Dixie Air Associates, Inc.
Nashville
Nashville Flying Service, Inc.

TEXAS
Abilene
Westair, Inc.
Amarillo
Sky Sales, Inc.
Austin
Ragsdale Flying Service
Beaumont
Beaumont Flying Service
Dallas
Dal-Tex Aviation, Inc.
Del Rio
Val Verde Aviation
Denton
Harte Flying Service
El Paso
Champ's Aviation of El Paso, Inc.
Fort Worth
Aircraft Sales Company
Houston
Cruse Aviation, Inc.
Kerrville
Kerrville Flying Service
Longview
Aircraft Sales Company
Lubbock
Champ's Aviation of Lubbock, Inc.
McAllen
McCreery Aviation Company
Odessa
Odessa Aero Service
San Angelo
Southwest Aircraft Sales
San Antonio
Howard Aero, Inc.

TEXAS *(Continued)*
Victoria
Ogden Aviation
Wichita Falls
Texairmen, Inc.

UTAH
Ogden
Southwestern Skyways of Utah, Inc.

VIRGINIA
Richmond
Davenport Airlines, Inc.
Roanoke
W. Clayton Lemon

WASHINGTON
Okanogan
Okanogan Skyways
Pasco
Parkinson Flying Service
Renton
Renton Aviation, Inc.
Seattle
Washington Aircraft & Transport Corp.
Spokane
John P. Mifflin Aircraft
Tacoma
Lake Aero Service, Inc.

WEST VIRGINIA
Clarksburg
Aero Mech, Inc.

WISCONSIN
Green Bay
Leithold Aviation Co.
Kohler
Thompson Flying Service
Middleton
Morey Airplane Co.
Milwaukee
Gran-Aire, Inc.
Oshkosh
Wittman Flying Service

WYOMING
Cheyenne
Sky Harbor Air Service

HERE IT COMES!

THE NEW 1957 CESSNA 172

A bright, brilliant new version of the only low-priced all-metal airplane with LAND-O-MATIC* landing gear

**Patented landing gear that has revolutionized flying*

The Cessna 172—the airplane so revolutionary, so easy to "drive," *that more people bought it than any other airplane in 1956* . . . now sleeker, smarter, more beautifully efficient than ever for 1957—priced at $8,975, f.a.f. Wichita.

SEE — FLY THE CESSNA

ALABAMA
Tuscaloosa
Dixie Air, Inc.

ARIZONA
Phoenix
Sun Valley Air Service, Inc.

ARKANSAS
Little Rock
Kenneth Starnes Aviation Service
West Memphis
Bowen Flying Service

CALIFORNIA
Bakersfield
Pemberton Flying Service
Bishop
Bishop Flying Service, Inc.
Chico
The Morehead Company
El Centro
Tru-Air, Inc.
Eureka
Pierce Flying Service
Fresno
Hunt Aviation, Inc.
Fullerton
Ful-Air Service
Long Beach
Air-Oasis Company
Modesto
Pacific Air School
Napa
R. A. Bridgeford, Inc.
Oakland
California Aviation Service, Inc.
Oxnard
P. J. Murray
Pacoima
Hank Coffin Aircraft, Inc.
Redding
H and H Flying Service
Sacramento
Patterson Aircraft Co.

CALIFORNIA *(Continued)*
Salinas
Salinas Aircraft, Inc.
San Diego
Huntair, Inc.
San Francisco
Bay Aviation Services
San Jose
Wright Bros., Inc.
Santa Maria
Machado Flying Service
Santa Monica
Erle L. Bacon Corporation
Van Nuys
The Business Aviation Company

COLORADO
Cortez
Cortez Flying Service, Inc.
Denver
Clinton Aviation Company
Grand Junction
Monarch Aviation, Inc.
Greeley
Dick Nolan's Aircraft Sales

CONNECTICUT
South Meriden
Meriden Aircraft Corp.

FLORIDA
Fort Lauderdale
Sunny South Aircraft Service, Inc.
Fort Myers
Fort Myers Airways, Inc.
Jacksonville
Laurie Yonge Flying Service, Inc.
Lakeland
Lakeland Aero Service
Orlando
Orlando Flying Service, Inc.
Panama City
Sowell Aviation Company, Inc.
Pensacola
Bell Flying Service

FLORIDA *(Continued)*
Stuart
St. Lucie Skyways
Tampa
Prince Aviation

GEORGIA
Atlanta
Executive Aviation, Inc.
Fulton Air Service, Inc.
Macon
Lowe Aviation Co., Inc.
Savannah
Hurd Flying Service

IDAHO
Boise
C and P Aircraft Sales
Burley
Ken Roundy Skyways
Idaho Falls
Idaho Aviation Center, Inc.

ILLINOIS
Aurora
Aurora Airways
Carbondale
Midwestern Aero Service, Inc.
East Alton
Walston Aviation, Inc.
East St. Louis
Walston Aviation, Inc.
Harvey
Aviation Activities, Inc.
Litchfield
W. L. S. Flying Service
Metropolis
Ohio Valley Aviation Company
Moline
Aeroline Flight Service
Northbrook
Mid-States Aviation Corporation
Quincy
Business Aircraft, Inc.
Rockford
Rockford Aero Service

ILLINOIS *(Continued)*
Springfield
Capitol Aviation, Inc.
Waukegan
Lake County Air Service, Inc.
West Chicago
Fox Valley Aviation Corporation
Wheeling
Pal Aero Sales

INDIANA
Anderson
Anderson Charter & Flying Service
Angola
Paul D. Eyster, Inc.
Elkhart
Hanley Air Activities, Inc.
Ft. Wayne
Consolidated Aircraft Repair, Inc.
Indianapolis
Sky Harbor, Inc.
Lafayette
Halsmer Flying Service
South Bend
Stockert Flying Service, Inc.
Terre Haute
Tumbleson Aviation

IOWA
Cedar Rapids
Hunter Flying Service, Inc.
Des Moines
American Aviation Company
Dubuque
Midwest Aviation Company
Keokuk
Lindner Flying Service
Mount Pleasant
Breazeale's Flying Service
Oskaloosa
Roth Airways
Shenandoah
Shenandoah Airways, Inc.

IOWA *(Continued)*
Sioux City
Sioux Air, Inc.

KANSAS
Arkansas City—Winfield
Smyer Aircraft Company
Chanute
Dickerhoof Flying Service
Lawrence
Erhart Flying Service
Manhattan
Capitol Air Service
Topeka
Capitol Air Service
Wichita
Yingling Aircraft of Kan., Inc.

KENTUCKY
Bowling Green
Bridges Aircraft Sales & Ser.
Lexington
Bohmer Flying Service, Inc.
Louisville
Kentucky Air Transport
Owensboro
Ayer Flying Service

LOUISIANA
Baton Rouge
Hair Flying Service
New Iberia
Pelican Aviation Corp.
New Orleans
Poelman Aircraft Co., Inc.
Shreveport
Southern Aviation Corp.

MAINE
Trenton
Bar Harbor Airways, Inc.

MARYLAND
Baltimore
Hinson Aviation Company

MASSACHUSETTS
Beverly
North Atlantic Airways
North Adams
Mohawk Valley Aviation Company, Inc.
Worcester
Jennings Brothers Air Service, Inc.

MICHIGAN
Ann Arbor
Ann Arbor Aero Service
Coldwater
Coldwater Flying Service
Detroit
Great Lakes Airmotive, Inc.
Flint
Flint Aeronautical Corp.
Jackson
Prouch-Eteo Flying Service
Kalamazoo
Kalamazoo Flying Ser., Inc.
Lansing
Hughes Flying Service
Pontiac
Barbers Flying Service
Port Huron
Via Air, Inc.
South Haven
South Haven Flying Service

MINNESOTA
Hopkins
Nelson Ryan Aircraft Sales
South St. Paul
Lysdale Flying Service

MISSISSIPPI
Clarksdale
Mississippi Valley Aircraft Service
Hattiesburg
English Flying Service

MISSOURI
Kansas City
Executive Aircraft Company

THE AIRPLANE THAT MAKES FLYING LIKE DRIVING!

Get your first breath-taking look at the 1957 model of this sensational "drive-it-yourself" airplane at your Cessna dealer's today.

See for yourself the extra quality built into this *all-metal* airplane—the beautiful new interior and exterior styling. But most important, see how Cessna's high-wing stability, Cessna Para-Lift flaps and Cessna's exclusive, wide-span patented LAND-O-MATIC landing gear make it easy for you to learn to fly . . . up . . . down . . . on the ground . . . through the air.

Cessna

Inquire about Cessna lease plans

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St. Louis
Interstate Airmotive, Inc.
Springfield
RapidAir, Inc.

MONTANA
Billings
Lynch Flying Service
Cut Bank
Severson Air Activities, Inc.
Great Falls
Severson Air Activities, Inc.
Kalispell
Flathead Air Transport, Inc.

NEBRASKA
Hastings
Hastings Skyways
Lincoln
Arrow Aviation, Inc.
North Platte
Clinch Flying Service
Omaha
Sky Harbor Air Service

NEVADA
Las Vegas
Alamo Airways, Inc.
Reno
Reno Flying Service

NEW HAMPSHIRE
Concord
Ferns Skyhaven, Inc.

NEW JERSEY
Farmingdale
Monmouth County Airport, Inc.
Morristown
Morristown Airport Corporation
Paterson
Totowa-Wayne Airport, Inc.
Somerville
Thor Solberg Aviation Company

NEW MEXICO
Carlsbad
McCausland Aviation, Inc.
Santa Fe
Southwestern Skyways, Inc.

NEW YORK
Gouverneur
Central Airways
Manor Haven, Long Island
Ventura Air Service
Ronkonkoma, Long Island
Long Island Airways, Inc.
Syracuse
Precision Air Company
Wappinger Falls
Poughkeepsie Aviation Service
White Plains
International Aviation Industries, Inc.

NORTH CAROLINA
Charlotte
Cannon Aircraft Sales and Service, Inc.
Gastonia
McCord's Aero Service
Hickory
Cannon Aviation Co., Inc.
Wilson
Wilson Air Service and Sales

NORTH DAKOTA
Bismarck
Capital Aviation Corp.
Bowman
Wokal Flying Service

OHIO
Bowling Green
Vaughan Flying Service
Chesapeake
Huntington Airport, Inc.
Cincinnati
Cincinnati Aircraft
Columbus
Lane Aviation Corporation

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Repair and Sales Depot, Inc.
Dayton
Dayton Aircraft Sales Company
Defiance
Zelair
Lima
Lima Aviation Corporation
Magnolia
Magnolia Airport
Mansfield
Richland Aviation, Inc.
New Philadelphia
Tuscarawas County Aviation
North Benton
Miller Flying Service
Piqua
Piqua Aircraft
Sandusky
Sky Tours, Inc.
Steubenville
Steubenville Aero Service
Willoughby
General Aviation, Inc.
Zanesville
Southeastern Ohio Air Service, Inc.

OKLAHOMA
Ardmore
Ardmore Air Service
Miami
Miami Aircraft, Inc.
Muskogee
Sam's Flying Service
Oklahoma City
Sky Service, Inc.
Shawnee
Air Service, Inc.
Tulsa
Yingling Aircraft of Oklahoma, Inc.

OREGON
Eugene
Shirley's Air Service

OREGON *(Continued)*
Klamath Falls
Liston Aircraft
Medford
Rogue Flying Service
Pendleton
Pendleton Skyways, Inc.
Portland
Skyways, Inc.
Prineville
Dick Ballantine Flying Service, Inc.

PENNSYLVANIA
Allentown
Lehigh Aircraft Company, Inc.
Beaver
Alfred B. Bennett
Bedford
Blair-Bedford Airways, Inc.
Bristol
Engle Flying Service, Inc.
Fairview
Erie County Flying Service
Forty Fort
Smith Flying Service
New Cumberland
L. B. Smith Aircraft Corp. of Penn.

RHODE ISLAND
Warwick
Jennings Brothers Air Service, Inc.

SOUTH CAROLINA
Anderson
Carolina Aero Service
Greenville
American Aviation Service

SOUTH DAKOTA
Aberdeen
Aberdeen Flying Service
Sioux Falls
Hubbard Aviation, Inc.
Watertown
Hubbard Aviation Company

TENNESSEE
Chattanooga
Aircraft Sales & Service Company
Memphis
Dixie Air Associates, Inc.
Nashville
Nashville Flying Service, Inc.

TEXAS
Abilene
Westair, Inc.
Amarillo
Sky Sales, Inc.
Austin
Ragsdale Flying Service
Beaumont
Beaumont Flying Service
Dallas
Dal-Tex Aviation, Inc.
Del Rio
Val Verde Aviation
Denton
Harte Flying Service
El Paso
Champ's Aviation of El Paso, Inc.
Fort Worth
Aircraft Sales Company
Houston
Cruse Aviation, Inc.
Kerrville
Kerrville Flying Service
Longview
Aircraft Sales Company
Lubbock
Champ's Aviation of Lubbock, Inc.
McAllen
McCreery Aviation Company
Odessa
Odessa Aero Service
San Angelo
Southwest Aircraft Sales
San Antonio
Howard Aero, Inc.

TEXAS *(Continued)*
Victoria
Ogden Aviation
Wichita Falls
Texairmen, Inc.

UTAH
Ogden
Southwestern Skyways of Utah, Inc.

VIRGINIA
Richmond
Davenport Airlines, Inc.
Roanoke
W. Clayton Lemon

WASHINGTON
Okanogan
Okanogan Skyways
Pasco
Parkinson Flying Service
Renton
Renton Aviation, Inc.
Seattle
Washington Aircraft & Transport Corp.
Spokane
John P. Mifflin Aircraft
Tacoma
Lake Aero Service, Inc.

WEST VIRGINIA
Clarksburg
Aero Mech, Inc.

WISCONSIN
Green Bay
Leithold Aviation Co.
Kohler
Thompson Flying Service
Middleton
Morey Airplane Co.
Milwaukee
Gran-Aire, Inc.
Oshkosh
Wittman Flying Service

WYOMING
Cheyenne
Sky Harbor Air Service

Dear Kitten:

It occurs to me—as I cruise along dictating this epistle to my homely copilot (his shorthand is lousy)—that the time has come when you must stop playing Tricks or Treats on Halloween. Last week at home, I noticed, in a fatherly kind of way, that you have—er—ah—developed to the point where you must cease galavantin' up and down the street after Taps.

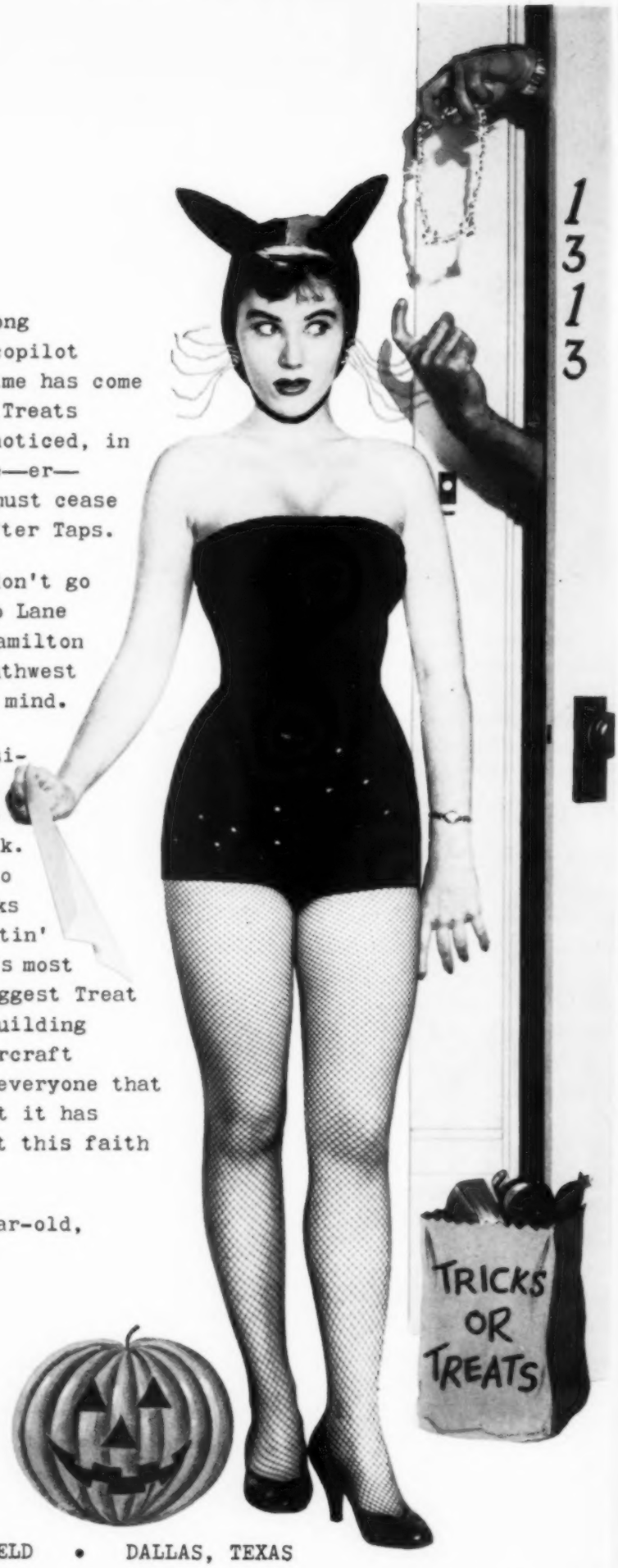
In any event, whatever you do, don't go Trickin' or Treatin' at 1313 Livitupp Lane where that bachelor advertising man, Hamilton Droolmore, lives! Working on the Southwest Airmotive account may have affected his mind.

I'm en route to the National Business Aircraft Association convention, October 23-24-25 at Miami and my airplane, as usual, is flyin' smooth as silk. Southwest Airmotive, pushing closer to its Silver Jubilee in '57, uses no Tricks —just skill and reliability—in Treatin' me and other business pilots to flying's most experienced service. And, for the biggest Treat of all, SAC is under way full-speed building its great, new $2,000,000 business aircraft terminal. Here is proof to NBAA and everyone that SAC is no Johnny-Come-Lately, but that it has faith in business flying—and has kept this faith for a Quarter Century.

—And I've got faith in my 19-year-old, 5'3", 110-lb., red-headed, blue-eyed daughter. Don't you have ditto in Mr. Droolmore.

Love,

Daddy



SOUTHWEST AIRMOTIVE CO. • LOVE FIELD • DALLAS, TEXAS

Just among ourselves

Last Call

WE seriously doubt if more than ten per cent of the people in general aviation realize how much of their flying future is at stake in studies and researches now going on in President Eisenhower's executive offices under the inspired leadership of Edward P. Curtis, who has taken temporary leave of absence from his desk at Eastman Kodak Company in order to help blueprint this nation's aviation facilities requirements during the next ten and twenty years.

Despite excellent press coverage of this important assignment the broad and far-flung civil aviation complex of pilots, plane owners and operators doesn't seem too concerned with the fact that we're rapidly filling up much of our airspace and all of our airports with airplanes and that new rules, new concepts and new systems are being devised to handle the situation.

An honest effort is being made to provide for everybody who flies so that every user of the airspace can be assured efficient and complete utilization of his equipment. This goes for the airlines, the military and owners and operators of 70,000 utility airplanes.

Right now the big unknowns surround utilitarian aviation. The airlines know what their requirements are now and what they will be. So does the military. But the broad segment of general aviation with all its hetrogenous elements, from the novice to the professional, from the putt-putt to the million-dollar executive transport, from the crop duster to the air taxi operator, are in a bad way when it comes to pinpointing present operations, let alone future requirements.

During the next sixty days a major national research organization will attempt to analyze for the first time in history the volume, nature and scope of general aviation. It will be done scientifically, by proven methods of research. And if all general aviation cooperates to the fullest extent when it comes to compiling on-the-spot figures and statistics, the operational patterns particularly can be definitely determined. It will not be necessary then to deal in half-baked figures and unsubstantiated prognostications with which general aviation has been plagued during the past decade.

They are playing for keeps in the present planning for future air traffic control and airborne communications. So only the facts will count when the new rules are written and the new systems ordered into being. Consequently every airman and airplane owner can be of service to himself and to general aviation by going all out in the studies to be undertaken in October. No stone is being left unturned by the General Aviation Facilities Planning Group to see that general aviation's requirements are spelled out as completely as those of scheduled air transport and the military. If they fail in the desired accomplishment it will only be because today's users of the airspace and airports just didn't have the time to bother.

Another First for Fairchild

ANNOUNCEMENT that Fairchild Aircraft is now taking firm orders for the M-185 10-place, 4-jet executive transport can be considered one of the most significant pieces of news in recent commercial aviation history.

It's been generally known that several companies have had jet powered designs for the business plane market under serious consideration. But until Fairchild announced full speed ahead on the M-185 there's been little but rumor and conjecture to go on.

Just as in the case of the Cessna 620 4-engine pressurized executive transport you can be sure the Fairchild decision to build a jet executive transport is based on accurate market information with a minimum of gamble involved. The speed and capabilities of such airplanes hold great promise for the future of executive air transportation, which now, together with the military industry and scheduled air transportation, is one of the big three of U. S. aviation.

It is impressively significant that Fairchild, a progressive old company with its early roots embedded in commercial aviation, is coming back into the fold after fifteen years as a military supplier. Fairchild's F-27 Friendship turboprop transport production is well under way for the local service carriers and the executive market. No preliminary military orders are involved in either the M-185 or the Friendship. Both are strictly commercial ventures developed with company funds without benefit of military money.

The re-entry of Fairchild Aircraft into the commercial market after so many years as a "service" organization marks the turning point in our industry from almost total attention to military business to a more balanced ratio between commercial and military. Except for the large transport designs — and even these involve military orders and military airlift implications — plus from 3,000 to 6,000 lightplanes annually during the past few years, our U. S. aircraft industry has become dangerously dependent on military orders.

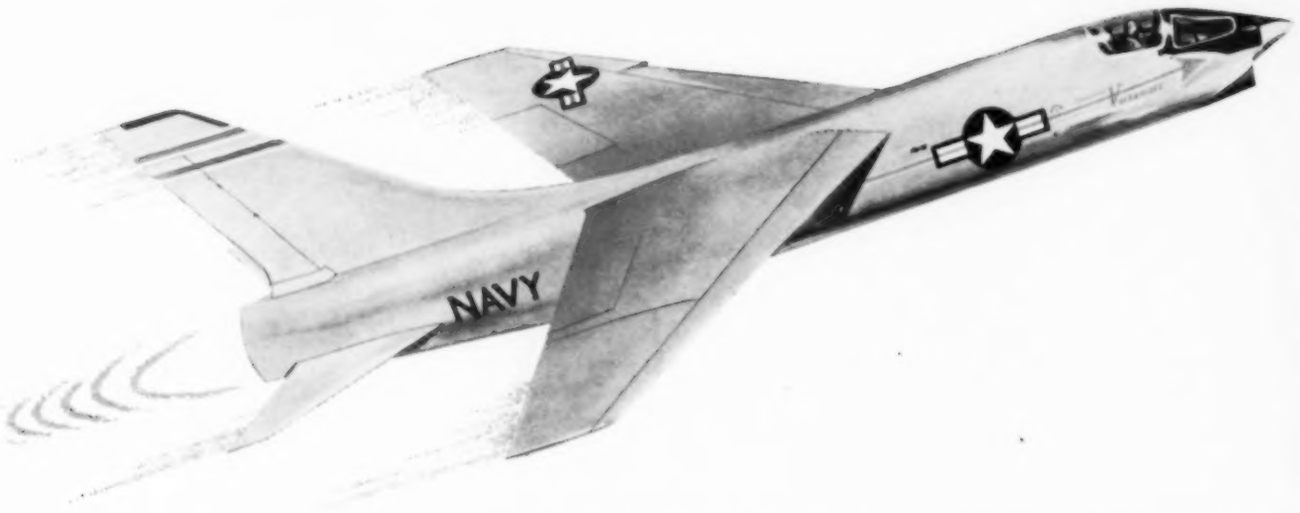
As our military services move more and more into the guided missile field and away from conventional piloted airplanes perhaps we can expect even more attention by more companies to the development and marketing of more airplanes for commercial peacetime pursuits. It is a healthy development and one that will bear good fruit for the national economy and for the general economic welfare of the entire trade-hungry world.

Well Earned Rest

IT is with mixed emotions that the industry learns of Larry Bell from active management and the presidency of Bell Aircraft failing health requires the resignation

(Continued on page 53)

NAVY SETS SPEED RECORD WITH VOUGHT CRUSADER!



F8U-1 Streaks over Thompson Trophy course at

1015.428 mph!

A standard production model Chance Vought F8U-1 Crusader — averaging a blazing 1,015.428 miles an hour — has set a U. S. speed record and captured the coveted Thompson Trophy for the Navy in that service's first entry in this historic aviation event.

The former official record, set last year, was 822 miles an hour.

Commander Duke Windsor, USN, crack Navy test pilot, streaked over California's Mojave Desert at an altitude of 40,000 feet in setting the record. He made two runs over a precisely measured 15.1 kilometer (9.3 miles) course, trailing a sonic boom across the desert in his wake.

Significantly, the triumph was achieved with a stock, combat fighter, identical with Crusaders soon to be delivered to the U. S. Fleet. It carried a full complement of cannon, and ballast equal to a full ammunition load.

The Crusader's U. S. record — first to top 1,000 miles an hour — marked the third time Chance Vought-designed aircraft have captured the Thompson Trophy. Commander Cook Cleland, USNR, flying as a civilian, piloted Corsair fighters to new records in 1947 and 1949.

THOMPSON TROPHY EVENT

The Thompson Trophy, traditional symbol of speed, has been awarded annually since 1929.

Originally, the trophy event involved a race around pylons with high performance piston-engine aircraft, but its character gradually changed with the advent of jets.

Today's supersonic speeds have ruled out closed course racing. A straightaway race against time has taken its place.

The first jet race was held in 1946, with the winning plane recording 516 miles an hour.

Now, ten years later, Chance Vought's Crusader — first plane ever entered in the event by the Navy — nearly doubled that speed when it became the first trophy winner to exceed 1,000 miles an hour.

CHANCE VOUGHT AIRCRAFT
INCORPORATED · DALLAS, TEXAS

DESIGNERS AND BUILDERS OF HIGH PERFORMANCE MILITARY AIRCRAFT SINCE 1917

BEAVERS AROUND THE WORLD

De Havilland Civil and Military Beavers
are operating in 50 different countries
on 7 continents, and from Pole to Pole.

Countries of the World in which Beavers may be found

Alaska	Colombia	Haiti	Malaya	South Africa
Antarctica	Dominican Republic	Honduras	Mexico	Saudi Arabia
Argentina	Dutch New Guinea	India	New Zealand	Syria
Australia	Ecuador	Indonesia	Norway	The Philippines
Bolivia	Egypt	Iran	Pakistan	United Kingdom
Brazil	El Salvador	Italy	Panama	United States
British New Guinea	Falkland Islands	Japan	Paraguay	Uruguay
Cambodia	Finland	Korea	Peru	Venezuela
Canada	Formosa	Laos	Puerto Rico	West Africa
Chile	Guatemala	Lebanon	Rhodesia	Yugoslavia

Designed and Built by

THE DE HAVILLAND AIRCRAFT OF CANADA LIMITED

POSTAL STATION "L", TORONTO, ONTARIO

WESTERN SALES AND SERVICE, EDMONTON, ALTA. — PACIFIC COAST SALES AND SERVICE, VANCOUVER, B.C.

MOST PROFITABLE AIRLINER

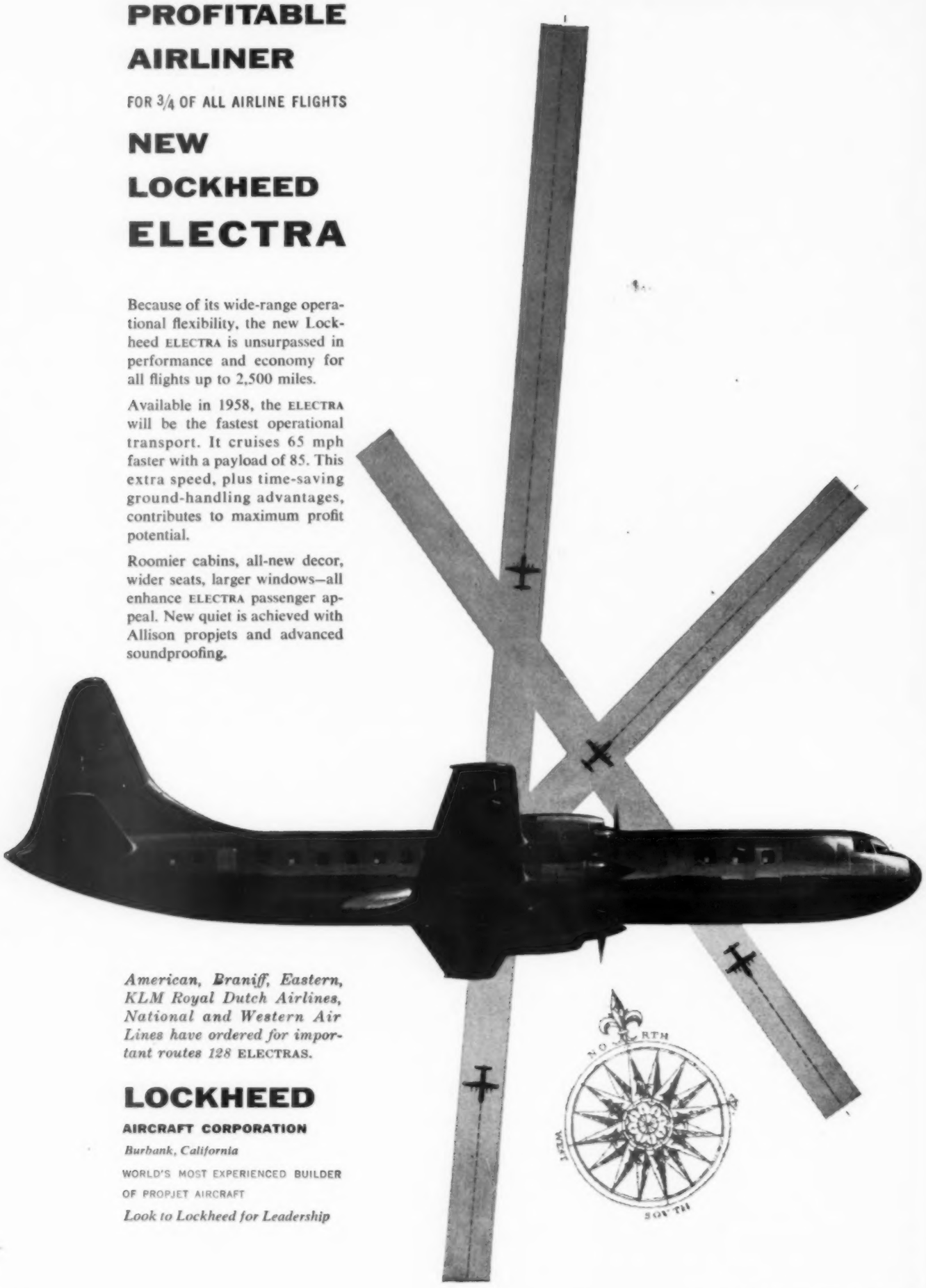
FOR 3/4 OF ALL AIRLINE FLIGHTS

NEW LOCKHEED ELECTRA

Because of its wide-range operational flexibility, the new Lockheed ELECTRA is unsurpassed in performance and economy for all flights up to 2,500 miles.

Available in 1958, the ELECTRA will be the fastest operational transport. It cruises 65 mph faster with a payload of 85. This extra speed, plus time-saving ground-handling advantages, contributes to maximum profit potential.

Roomier cabins, all-new decor, wider seats, larger windows—all enhance ELECTRA passenger appeal. New quiet is achieved with Allison propjets and advanced soundproofing.



American, Braniff, Eastern, KLM Royal Dutch Airlines, National and Western Air Lines have ordered for important routes 128 ELECTRAS.

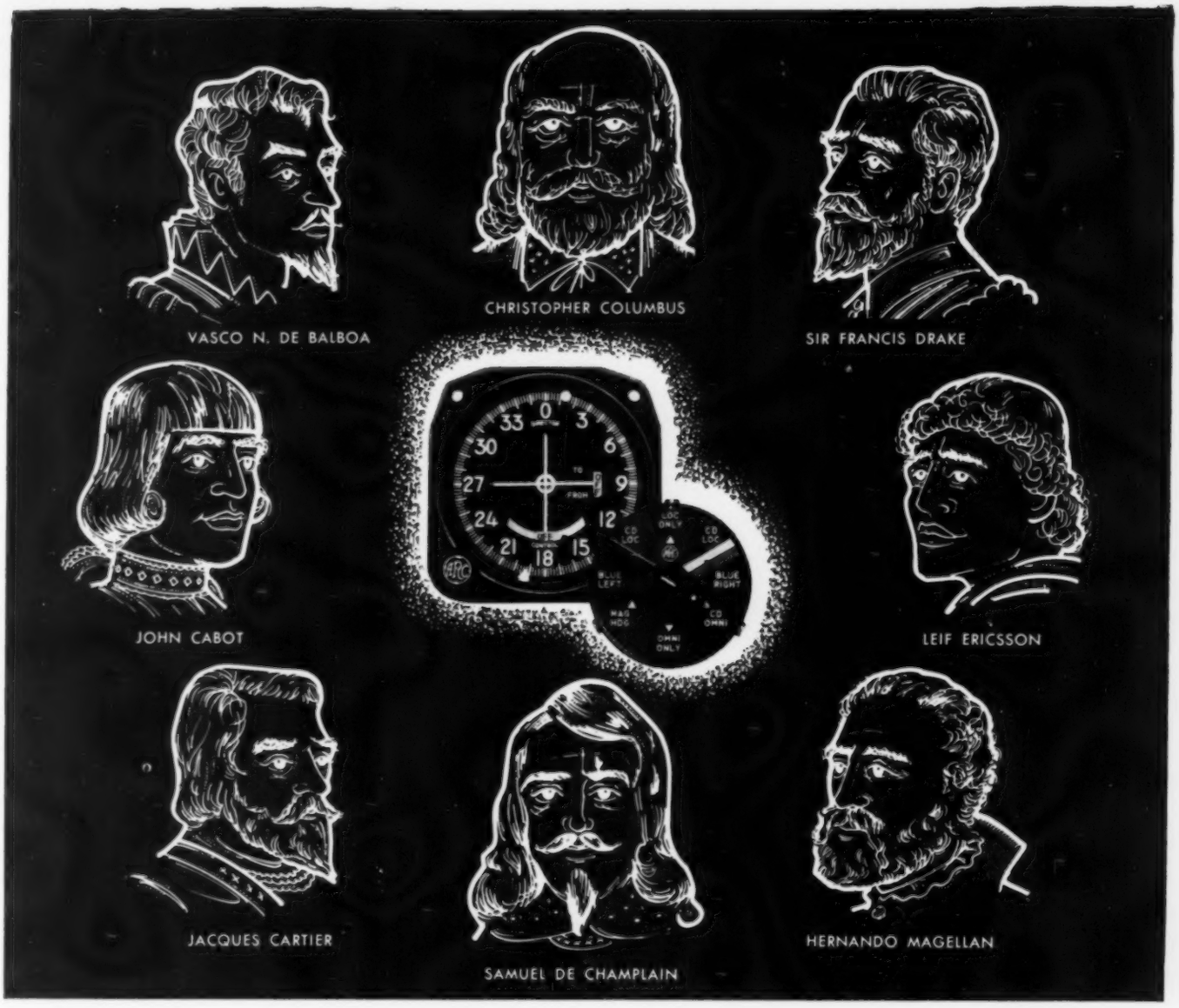
LOCKHEED

AIRCRAFT CORPORATION

Burbank, California

WORLD'S MOST EXPERIENCED BUILDER OF PROPJET AIRCRAFT

Look to Lockheed for Leadership



FAMOUS NAVIGATORS

ARC's Course Director is TODAY's Big Name in Navigation Aids!

Pilots no longer have to perform mental computations to determine the exact headings required to intercept and fly a desired VOR radial or runway localizer. ARC's CD-1 Course Director, now in use in hundreds of aircraft, relieves the pilot of these problems and gives him time to concentrate on others at this critical period.

With ARC's CD-1 the pilot merely (1) selects his VOR or localizer station, (2) sets his Course Director to the bearing of the desired VOR radial or localizer, (3) turns his aircraft until the vertical needle of the cross-pointer meter is centered, and (4) continues to fly the aircraft, keeping the needle centered. The aircraft will intercept the selected track quickly and smoothly and at the same time compensate exactly for wind drift. No mental computations – no overshoot with resulting zigzags to bracket the desired course.

This useful and reliable equipment adds only 10 pounds to your aircraft. Ask your ARC dealer to install the CD-1, along with a dual installation of ARC's Type 15D VOR Equipment. The ease and precision with which you can then fly VOR and Localizers will be a revelation – and incidentally good insurance.

Miniaturized Automatic Direction Finders
Omni/ILS Receivers • Course Directors • UHF and VHF Receivers and Transmitters • LF Receivers and Loop Direction Finders • 10-Channel Isolation Amplifiers • 8-Watt Audio Amplifiers • Interphone Amplifiers
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Dependable Airborne Electronic Equipment Since 1928

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AERO COMMANDER DISTRIBUTORS

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Bendix Leader in All Types of Ignition . . .

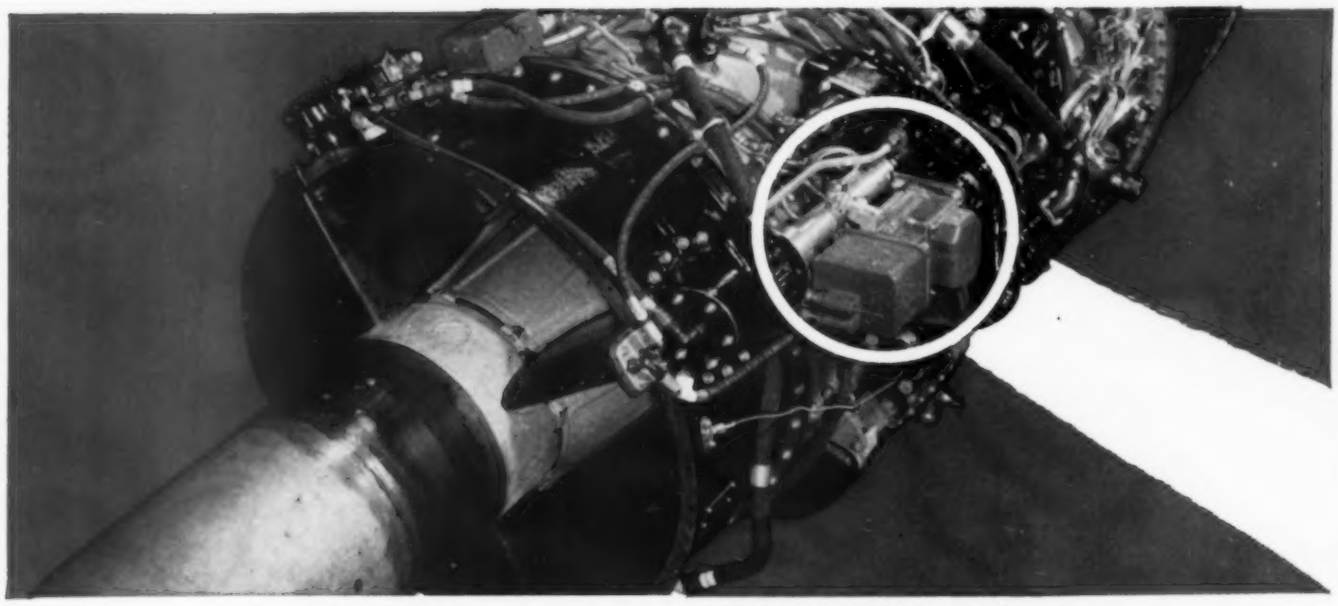
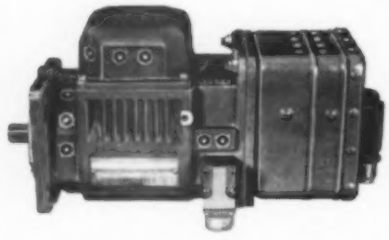


Illustration shows Bendix TMGLN *system installed on the Curtiss-Wright J65W-4 Jet-Engine*

Offers the first self-contained JET IGNITION SYSTEM



This TMGLN *jet ignition system has been performance proven and is currently in production on Curtiss-Wright J65W-4 Engines for carrier based aircraft.*

Bendix* proudly announces the first self-contained jet engine ignition system. This system generates within itself the electrical energy required to fire the engine igniter plugs. This unique system, known as the TMGLN jet ignition system, employs a magneto type alternating current generator which allows the ignition system to operate independently of an outside source.

Here is just another example of the ability and versatility of Bendix to come up with the best solution to any and all jet ignition problems.

Whether your requirements call for the TMGLN self-contained system or the conventional battery energizing type of jet ignition, you'll do better with Bendix—The Most Trusted Name in Ignition. *TRADEMARK

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This is Temco's new Engineering Center

E. G. Hamilton and George F. Harrell, Architects, Dallas

Idea center for new designs in complete aircraft and weapons systems . . . test-lab for tomorrow's planes and missiles . . .ultra-modern workshop for a growing force of engineers.

Increasing assignments for development of such Temco projects as the Navy's TT-1 jet primary trainer, plus important subcontracts in missile and electronics work, have doubled Temco's Engineering Department within the past two years.

Temco's new million-dollar Engineering Center is designed to permit further expansion at any time. Future programs, already under negotiation, promise yet another doubling in the immediate future.

What is This?

This is a blueprint for tomorrow's air transportation. It's Temco engineering at work on design of components for America's first turbo-prop airliner — the Lockheed Electra.

Temco's proven engineering ability was a deciding factor in earning this important assignment: engineering, tooling and manufacturing ailerons, wing flaps and tips, leading edge assemblies. For the commercial Electra project, Temco is providing the same drawing-board-to-delivery service that is currently at work on fourteen of the nation's top military aircraft.

Engineers: Openings in all phases of aircraft design and development; write to Engineering Personnel, Temco Aircraft Corp., Dallas, Texas

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Newest portrait of the Cessna 620 shows it landing at Wichita Municipal Airport after a fly-by with Test Pilot Dale Westfall at the controls. Frank Martin, Cessna marketing manager, is shown at left telling pilots and executives production has been ordered and that the standard price is $375,000.

Production for $375,000 Cessna

FLIGHT MAGAZINE PHOTOS

By TOM ASHLEY

THERE is no longer any speculation whether Cessna Aircraft Company will produce its 4-engine, 9-11-place, pressurized corporate transport. It announced production plans, with 1958 deliveries, to corporate executives and pilots invited to an open house presentation of the Model 620 last month, when many details of the airplane were released for the first time, including a standard price of $375,000 and new upward revisions in power, performance and weights.

Three corporation pilots previewing the Cessna 620 are pictured with it below. Left to right are A. M. (Swede) Johnson of El Paso Natural Gas, Fred Dick of Southwestern Public Service and Tony Zuma of Tennessee Gas Transmission. Engine accessibility is shown by opened cowling.

Engine installation and accessories are detailed in these Cessna sketches. The 620 is powered by four Continental GSO-526A supercharged, 6-cylinder engines, each rated at 350 hp. at 3,200 rpm. for take-off and at 310 hp. at 3,000 rpm. for maximum continuous operation. Reverse-pitch Hartzell propellers are available. Note exhaust augmentor arrangement in cooling diagram.

The go-ahead for Cessna's "Big 4" came after the airplane's 17th flight and 25 hours of flight testing, completing Phase 1 of its long flight test program which will be culminated in about 9 months with CAA certification under CAR Part 04b air transport category requirements.

While no firm orders can be taken now, options are available to commercial purchasers to obtain a delivery preference on a first-come-first-served basis. The option calls for a $10,000 deposit which would be returned in March, 1957, if the firm price, to be fixed at that time, exceeds the tentative standard price of $375,000, or if the delivery schedule is unsatisfactory. Cessna has not solicited any prospects to execute the option, which obviously is offered mainly to dispel any doubts that production has been ordered by the factory.

Guy Miller, formerly with Beech, specializing in Super 18 sales, heads Cessna 620 sales.

New specifics for the airplane, listed in full with this article, include an empty weight of 10,000 lbs., a gross weight of 15,000 lbs., useful load of 5,000 lbs.; 282-mph. top speed and 260-mph. maximum cruising speed.

Higher ratings for the engines are now stated. The supercharged Continental GSO-526A 6-cylinder, horizontally-opposed, wet-sump engine is rated at 350 hp. at 3,200 rpm. for take-off, up from 320 hp., and at 310 hp. at 3,000 rpm. for maximum continuous operation, up from 290 hp. This 310 hp. is available up to an altitude of 15,000 ft. because of the supercharging.

The new 282-mph. top speed is up from 269 mph. formerly quoted and the new 260-mph. maximum cruising speed, which is for 2,600 rpm. at 12,500 ft., is up from 235 mph. formerly quoted.

Gross weight of 15,000 lbs. compares to 13,650 lbs. quoted previously. The empty weight had not been specified earlier and the 10,000-lb. figure is still tentative. It includes a 275-lb. allowance for radio and electronics,

(Continued on page 38)

Cessna Model 620 Preliminary Factory Data as of Sept. 21, 1956

Type: 4-engine, pressurized, tricycle gear, 9-11-place light transport designed to CAR 4b transport category requirements.

Power Plants, Propellers: 4 Continental GSO-526A 6-cylinder, horizontally-opposed, supercharged, geared (.688 to 1), wet-sump engines with exhaust augmentor tubes. 4 Hartzell 93-in. diameter 3-blade propellers, constant-speed, full-feathering with reversible pitch optional.

Horsepower: Take-off power 350 hp. per engine at sea level and 3,200 rpm. METO 310 hp. at 3,000 rpm. from sea level up to 15,000 ft.

Fuel and Capacity: 535 gals., 100-octane. Total oil, 20 gals.

Price	**$375,000**
TO Gr. Wt., lbs.	**15,000**
Lndng. Gr. Wt., lbs.	**14,285**
Empty Wt. (Est.), lbs.	**10,000**
Useful Ld., lbs.	**5,000**
Top Spd., 15,000 ft., mph.	**282**
Max. Cr. Spd., 12,500 ft., 2,600 rpm., mph.	**260**
Rate of Climb, 15,000 lbs., fpm.	**1,150**
Rate of Climb, 13,000 lbs. @ SL, fpm.	**1,520**
CAR Operational Clng., ft.	**25,000**
3-Eng. Svc. Clng., 14,500 lbs., ft.	**20,000**
Endurance, 55% hp., hrs.	**9**
TO Dist. Over 50-ft. Obstacle, 1 Eng. Out at V-1, ft.	**3,750**
Lndng. Dist. Over 50-ft. Obstacle, 14,285 lbs., ft.	**3,050**
Max. Range, Optimum Pow., 15,000 ft., mi.	**1,700**
Span, ft.	**55**
Length, ft.	**41.55**
Height, ft.	**16.4**
Wing Area, sq. ft.	**340**
Wing Ldng., lbs. sq. ft.	**44.1**
Pow. Ldng., lbs. hp.	**10.7**
Fuselage Width, ins.	**74**
Fuselage Ht., ins.	**84**
Wing Aspect Ratio	**9**
Flap Area, sq. ft.	**48.4**
Aileron Area, sq. ft.	**21.8**
Hor. Tail Area, sq. ft.	**100**
Hor. Tail Span, ft.	**21.2**
Elev. Area, sq. ft.	**27**
Fin Area, sq. ft.	**25.3**
Stab. Area, sq. ft.	**71.5**
Vert. Tail Area, sq. ft.	**48**
Rudder Area, sq. ft.	**18.9**
Wheel Base, ft.	**12.7**
Tread, ft.	**18.3**
Main Wheel Size	**32x8.8**
Nose Wheel Size	**26x6.6**
Prop. Ground Clearance, ins.	**13.34**

NOTES: Performance is for gross weight and sea level unless noted. All performance estimated. Empty weight includes 275 lbs. for radio-electronics. All data preliminary pending CAA certification.

EQUIPMENT

Standard equipment has not been listed completely as such. Following is equipment run-down as given by Cessna on Sept. 21, 1956, for equipment descriptive purposes only:

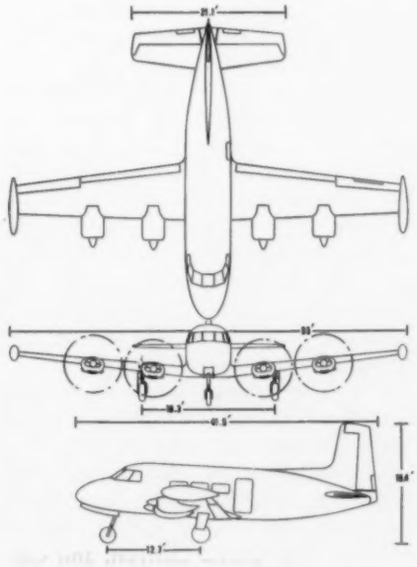
PRESSURIZATION: One specially designed gas turbine (55-hp. AiResearch turbine in prototype) in compartment aft of cabin provides pressurization, heating, air-conditioning and forced ventilation, as well as DC power source to start main engines. Ground heating, air-conditioning and ventilation as well as in flight. Cabin altitude of 8,000 ft. when airplane is at 18,000 ft. Turbine uses fuel from main supply.

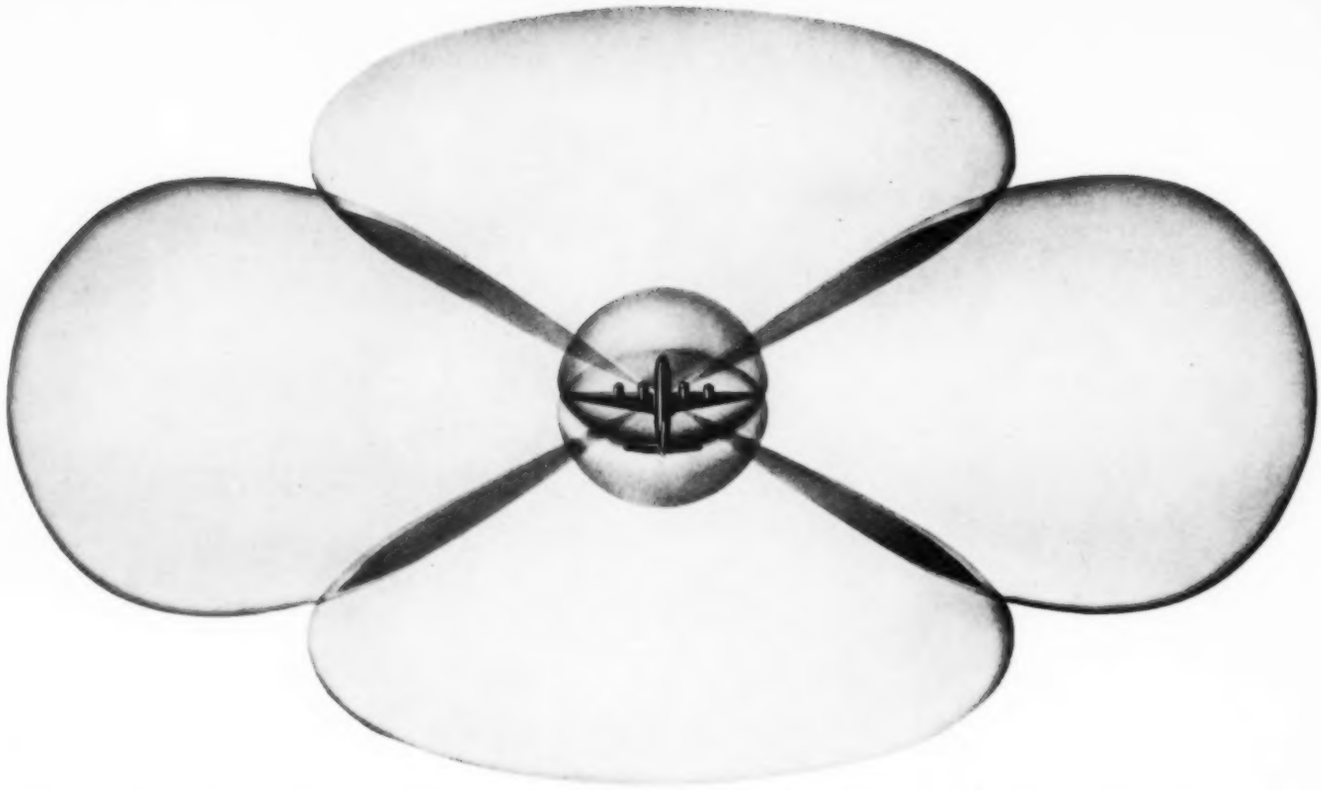
BATTERY: One nickel cadmium non-spillable (22 amp.-hr. type in prototype).

GENERATORS: Total of 5 generators, one on each engine and one on cabin turbine; each 50 amp 24 volts.

RADIO AND ELECTRONICS: Complete facilities provided for installation of ILS, VOR, ADF, autopilot, DME and training aids; mul-

(Continued on page 55)





An aircraft equipped with the new Collins proximity warning radar is surrounded by lobes of detection patterns as indicated by this drawing. Small ball-shaped pattern is for protection in an 800-ft. radius above and below. In the aircraft's plane of flight, patterns reach out two miles. —(Collins Radio Sketch.)

Collins Anti-Collision Radar

A new development of far-reaching significance in air safety

PROTECTION against aircraft mid-air collision is promised by a new Collins Radio Company development now being offered commercially to airline and business aircraft operators. An airplane carrying the new Collins equipment will be surrounded and shielded by a minimum of six radar energy patterns so that electronic devices aboard it will (1) detect any object or aircraft penetrating these patterns, (2) inform the pilot of the penetration by means of an instrument panel display giving its location and proximity, (3) continuously compute the penetration in terms of closure rate as a means of predicting a possible collision, and finally, (4) automatically signal the proper escape maneuver to prevent the possibility of colliding. Equipment for steps (1) and (2) is offered now; equipment for steps (3) and (4) will be a follow-on development.

The development has been under way for some time, having been stimulated by the recent airline mid-air collision over Grand Canyon, and Collins is confident it has the electronic answer to one of the most difficult safety problems affecting air progress. Its solution has been a private venture by Collins, which last month announced a production schedule with first deliveries in 1958 in time to meet existing air traffic complications and those involved in high-speed jet airliner schedules beginning in 1959.

Two separate but compatible systems are being perfected to comprise the new Collins anti-collision equipment. The first, referred to as Phase 1, will be a "proximity warning indicator" (PWI) system. The second, Phase 2, will be a "collision detection and avoidance" (CDA) system. The PWI, priced at $9,317.33 if produced in 500-unit quantity or $7,636 if manufactured in 2,000-unit quantity, would be delivered beginning in September, 1958. The CDA, not priced yet, would be delivered a year later.

A relatively compact unit, the PWI will weigh about 55 lbs. and its receiver-transmitter will be of one ATR rack size, measuring 10⅛ by 10 9/16 by 7⅝ ins. It will feature an instrument panel indicator measuring 5 by 5¼ inches. This indicator will be a display of lights, showing whether the detected airplane or object is (1) above or below, (2) left or right, (3) fore or aft, and (4) showing target distance out as far as 800 ft. above or below, and (5) distance out fore, aft, left or right at ranges 400 ft., 800 ft., 1 mile and 2 miles.

The proximity warning system will provide two functions. The first is to detect and inform the pilot when any aircraft comes within either a 400-ft. or 800-ft. radius of the aircraft. This provides a hemispherical detection around the aircraft, for detecting objects above or below the flight plane. The indication will continue until the object either goes beyond the 800-ft. radius or is within a minimum distance of 400 ft. of the center of the aircraft, when the 400-ft. lamp will light, and this indication will continue until the object goes beyond 400 ft. or is within a minimum distance of 200 ft., the closest detection range to prevent in-

dication of the aircraft's own wing tips or tail extremities.

The second function, in addition to the hemispherical detection, is for the PWI to simultaneously detect and display any aircraft that enters the flight plane within an included vertical angle of 150 degrees in any quadrant fore, aft, left or right, with warning lights registering range at 400 and 800 ft., and 1 mile and 2 miles.

In the hemispherical detection above and below the aircraft, the device will give additional warning only if another aircraft enters the opposite hemisphere from one that is presently displaying a warning. But in the same plane of flight as that of the aircraft, if the intruding aircraft is in one of the nearer ranges, a second aircraft in that quadrant will be detected entering the far ranges.

The small diameter of the hemispherical range is necessary to eliminate unnecessary warnings while operating near other aircraft in 1,000-ft. vertical separation under controlled conditions, as in a stack.

Objects having a cross-section area as small as 40 sq. ft. will be detected by the equipment. This is adequate to cover the head-on area of a small jet fighter. Propeller-driven lightplanes have over 150 sq. ft. of cross-section area.

Six separate flush-mounted or submerged antennas would comprise the antenna system for the PWI, four of these being horns and two being dipoles. They would not rotate, being fixed antennas. All would be very small, the horns (or "slots" could be used) being located in extremities such as the nose, tail and wing tips with the dipoles being atop and beneath the fuselage.

The system is an FM-CW radar, operating in the S band of about 3,000 megacycles with a 100-watt power output. A 400-cycle sweep rate of saw-tooth configuration will be used to modulate the CW carrier, locked on to and synchronized with the aircraft's 400-cycle power. This radar system does not use the conventional pulse-type transmission because its switching from "transmit" to "receive" consumes too much time to achieve the minimum ranges necessary. The FM-CW radar will work down to zero range.

Operation is similar to that of the well-known FM radio altimeter with continuous transmission rising in frequency with time. By the time a transmission strikes an object and returns, another frequency is being transmitted. The difference in transmitted and received frequencies determines the distance of the target.

Panel indicator for Collins proximity warning system consists of a large circular area divided into left-right and front and rear segments which would light up if a target is detected above or below. Smaller lights with range figures would indicate target detected in the instrument-equipped aircraft's plane of flight.
—(Collins Radio Drawing.)

Because cross-polarized antennas are used, rain clutter and atmospheric attenuation will not affect the system, which will detect aircraft or objects within rainfall or separated by intervening rainfall. The effects of ground echo can be eliminated or reduced to secondary importance.

Antenna switching is by a motor-driven rotary switch, which makes a complete circle every 2 seconds. This divides the time each antenna is used to one-fourth of the 2-second cycle, timing the antenna use in each of the four quadrants to about ½ second. Lights on the indicator are switched simultaneously with the antennas. Crossed linear polarization allows a single antenna to be used for both transmission and receiving in each quadrant. This also gives the same effect as circular polarization for rainfall penetration.

The PWI system has a range selector switch on the indicator. It offers three range settings for the pilot for 2 miles, 800 ft. and 400 ft. To avoid excessive warnings, the pilot would select the 800-ft. range when flying near known air traffic, as is found near metropolitan terminals.

A means of self-checking the system in flight is provided, so that the pilot may be assured that it is operable when desired.

The Collins equipment is the "self-sufficient" type, which means it is not dependent on equipment outside of the aircraft. At the same time, it will not be blocked, or interfered with, by equipment in several similarly-equipped aircraft flying in the same vicinity.

Selection of the S band of 3,000 megacycles enables Collins to use new coaxial cable developments for piping the signals between antennas and the receiver-transmitter unit, rather than waveguides, which would complicate the installation's lengthy connections.

Collins points out that its offering of the systems complies with the Air Transport Association's recent request to the electronics industry to submit design studies and proposals for anti-collision devices. The ATA Technical Committee has reported that it found the Collins proposal acceptable and ATA itself has now advised member airlines that Collins is prepared to proceed with the development and production of the devices at the earliest time.

"We believe that it is practical to develop the Phase 1 (PWI) equipment using known techniques and components," a Collins statement to the airlines declares. "It is our opinion, however, that before development of practical equipment meeting the requirements of Phase 2 can be undertaken, certain additional research must be accomplished. Research required in Phase 2 will be carried out concurrently with development and production for Phase 1, and it will be our design objective to develop the Phase 2 program in such a manner that Phase 1 equipments, to the maximum extent possible, will be compatible and usable in Phase 2."

The Collins time schedule for the entire program is as follows:

Phase 1 PWI Equipment: Installation drawings, May 1, 1957; prototype model, January 1, 1958; start of production, September 1, 1958.

Phase 2 CDA Equipment: Completion of initial research, January 1, 1958; prototype model, March 1, 1959; start of production, November 1, 1959.

Collins anticipates airline orders calling for a minimum of 500 units of the Proximity Warning Indicator system. Its pricing schedule takes into account a total production of some 2,000 units. Orders received prior to November 15, 1956, will benefit from later price adjustments due to increased volume of production. Those received after November 15 will be based on the volume of the initial production run of 500 units.

Development of the CDA system will require considerable additional research and test flying, chiefly because of a major problem not yet resolved — this is the effect of atmospheric turbulence on an airplane and on the equipment's measurement of an ap-

(Continued on page 52)

National Air Power Show

Thrills and recollections of an oldtimer at the 1956 exposition

By JAMES V. PIERSOL

AFTER 10 years away from the National Aircraft Shows, I attended the epochal event at Oklahoma City in September and was surprised to see such a vast display, in the air and on the ground. I was much moved by the cordial greetings of oldtimers who date back to the first "Aeroplane Exhibit" that I attended in Chicago, 37 years ago. This year I was delighted by the skill and enthusiasm of the youngsters who now sit in the pilot's cockpit.

Most of all, I was amazed by the effective manner in which the show—indoors and in the sky—told the adventuresome story of the past and the great promise in the future of flight.

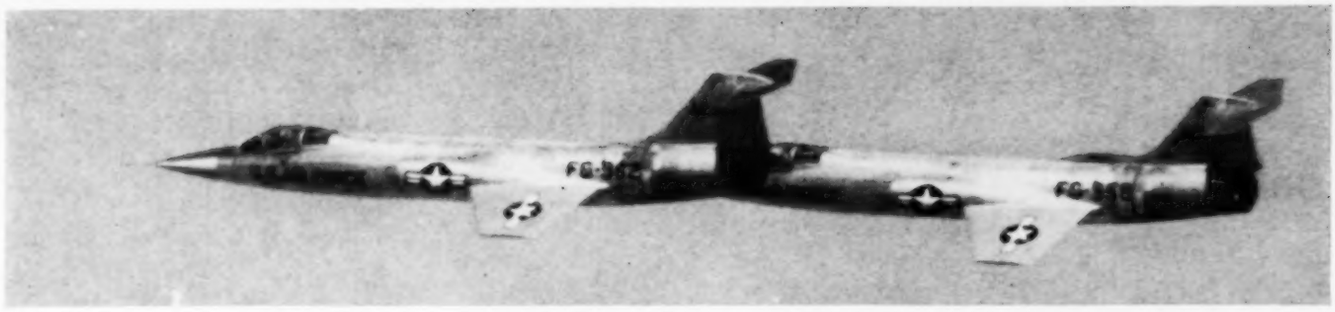
In the shade of an old Standard biplane which stopped me just inside the main gate, I reminisced on all the joys it brought to mind. In a Standard J1 nearly identical to the Kermac exhibit, I barnstormed the Mississippi Valley from Minnesota to the Delta, in 1920 and 21.

While looking at the 40-year-old design, which was well rigged and ready for flight, my mind flashed back 28 years to a meeting in Washington. There a group of barnstormers gathered to establish the first government requirements for airplane certificates of airworthiness. At the peak of the discussion, Clayton Bruckner, then a young Waco engineer, said the Standard could not be used as a measurement of airworthiness because "it flies on nothing but carriage bolts."

Then, a graying stranger in the back of the room modestly introduced himself as Charles Day, the designer of the J1. At this point in my reverie a low-flying jet bomber brought

FLIGHT MAGAZINE PHOTOS

Among prettier sights at the air power spectacle were hundreds of business planes awaiting take-off clearance each day of the 3-day military show. Here are just 20 of them — Beech Bonanzas, Piper Tri-Pacers, 4-place Cessnas, single-seat Mooney Mites and others moving up to the active runway.



First photos (right) showing Lockheed F-104's wedged inlets for engine air intake at supersonic speeds were obtained with our long-range lens when Air Force publicly displayed the new Starfires for the first time in a fly-by of two F-104's. They are shown dragging their tails at speeds far below their 1,400-mph. and higher combat velocities. "Bullets" in intakes control inlet shock waves. Note small span of 7.5- ft. wings above.

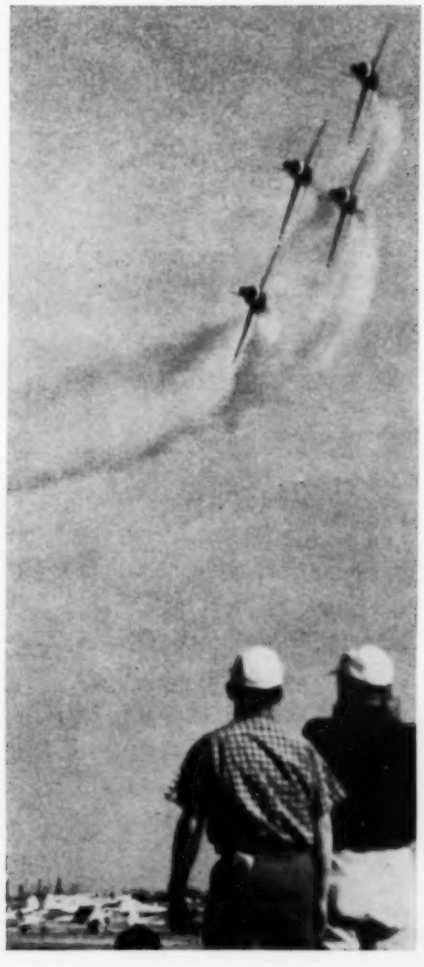
me back to the show. As it roared by it appeared to be bending its wings backward. Again, I glanced at the old Standard, glistening in angelic white. Its wings sweep back, too. Charlie Day must have known his carriage bolts, I thought. Without his genius our jets might look different today.

As I moved on to the big prairie called Will Rogers Airport, I knew the field was well named. Will was big, too. At midfield I paused alongside a Navy airship, tugging restlessly at its mooring mast in a gentle southerly breeze. It was the centerpiece of the ground show.

When a jet fighter flew by at a distance of a mile, disturbed air swung the ship across wind. Then it weather-cocked back into the breeze. Spectators standing around moved back and forth with each swing of the blimp, eagerly trying to get a closeup of the gondola protruding from its belly.

The scene carried me back to the early thirties when Lt. Com. Charles E. Rosendahl (now rear admiral retired) took me and other newsmen for a 12-hour cruise on the airship Akron. Also it reminded me of long-ago con-

Afterburners thundering and pilots weighted down with G's throughout their act, the new Air Force Thunderbirds performed high-speed, ground-level precision formation acrobatics within the airport boundaries in their supersonic North American F-100 fighters. They stole top honors from the Navy's amazing Blue Angels for the first time in a competitive show.

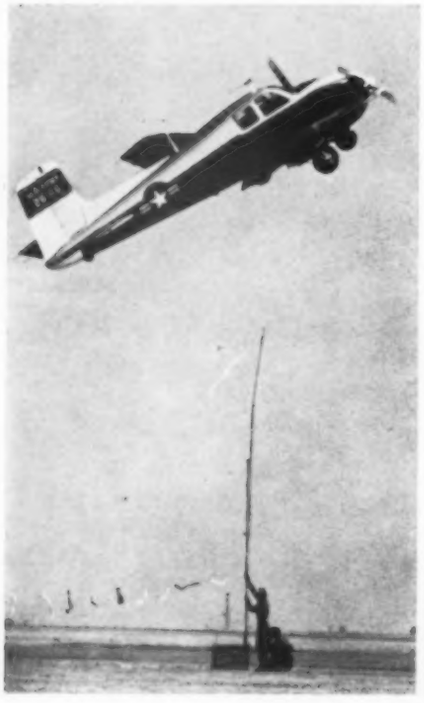


Army aviation displayed winged assault capabilities in which scores of fixed-wing and helicopter aircraft and many troops "captured" an air strip in the laps of the spectators. De Havilland Beavers are shown chuting ammunition and other supplies while a Sikorsky assault copter (right) hauls off a "disabled" Cessna L-19. Spectators disregarded the missiles to parade through a Vertol assault copter (below).

troversies over the relative vulnerability of the airship and the airplane. It gave me an idea for starting a new controversy.

So at lunch in the Hangar of Hospitality, on the first day of the three-day show, I whispered to my old friend, Alfred V. Verville:

"Better be on the field at 2:20 sharp. The Air Force is going to open its flight demonstrations with a sonic boom aimed to deflate the Navy blimp. The Navy is getting so much publicity out of that big gas bag the



Jump take-offs over a 30-ft. barrier were performed (below) by a twin-engine Beech L-23 (left) a de Havilland Beaver (center) and a de Havilland Otter. The Beech is shown less than 750 ft. from start of take-off, the 450-hp. Beaver only about 400 ft. from starting and the big 600-hp. Otter, which can carry 2,400-lb. payload, about 600 ft. from the starting run. Beaver can carry half-ton payload. These planes were lightly loaded for the exhibition.

The Army set a new helicopter flight endurance record of 57 hrs. 50 mins. with this Bell H-13, shown landing after remaining aloft more than four days.

Air Force is going to puncture it with one stroke of massive retaliation."

Old Fred was perturbed. He frowned furrows so deep I could feel the strain of his thinking. He had been on Brig. Gen. William E. Mitchell's staff long ago when Billy was scornfully denouncing the Navy. Now Fred is on the staff of the Navy Bureau of Aeronautics. He has friends in both outfits and his allegiance was a little tried. But not for long.

"They can't do it," Verville exclaimed. "It would start a nasty mess."

He tapped the table with his fingertips. Then without even looking at his slide rule, the veteran engineer said:

"Aw, let 'em boom away. The skin of the airship is designed to flex with changes of pressure."

Across the table Maj. Gen. Leigh Wade, USAF retired, smiled at Verville. I recalled that as a daring young pilot-officer Lieut. Wade had participated in the first around-the-world flight in 1924. But that did not move him. The general was only amused by the idea of the Air Force deflating the Navy's blimp.

The oldtimers were so busy having a good time I could not even start a rumor, least of all a controversy. So I moved on with a feeling that something nice was going to happen, and sure enough it did.

Just inside the hangar where the Air Force showed the evolution of aeronautics, from balloons to new ideas for inter-planetary flights, I was stopped by an old Curtiss OX-5 engine. It was exactly like the one that powered the beloved Jenny in which I first flew in 1919. I took off my cap and leaned carefully over that old hunk of monel metal. I counted over again all of the 32 rocker-arm apertures, push rods and valve sleeves I used to squirt with a hand-held oil can before each flight.

Nearby there was a rotary engine much like the LeRhone that powered my first Avro and my Thomas Morse Scout. Once again I could smell the spicy fragrance of the castor oil the rotary burned. I could hear its quiet hum, and it was good. The rotary was the smoothest engine in my experience, until jet turbines, shock-absorbent mountings and ear plugs came along.

As I continued browsing through the exhibit called "Airvolution" I was again stopped by a miniature merry-go-round powered by silent energy captured from the sun. It recalled the Pulitzer Air Races at Fairfield, Ohio, in 1924, when the Army Air Service demonstrated the first unmanned, radio-directed automobile chassis. Nowadays we regularly direct and fly airplanes by remote radio control. I will not be surprised to see airplanes of the future powered by silent, solar energy. Anything we can make in model form we eventually make full size.

At the Army's hangar I was surprised by the tonnage of weapons and accessories our field forces are equipped to deliver by parachute. The Army no longer passes the ammunition, it 'chutes it—come hell or high water.

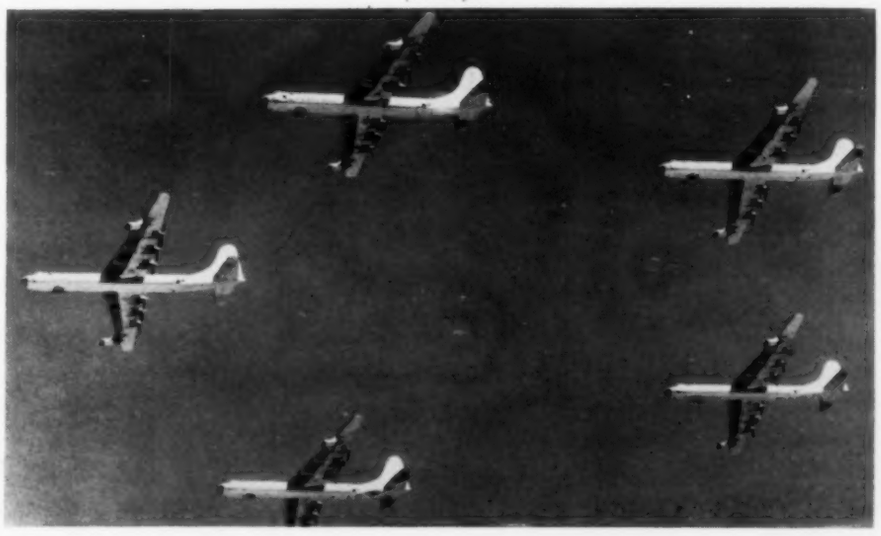
I was a little awed by the gear that a paratrooper packs on his back while jumping to the attack. In times gone, I mused, we called our ground troops doughboys. Nowadays they ought to be called hardtacks. It takes much strength and real guts to be a paratrooper.

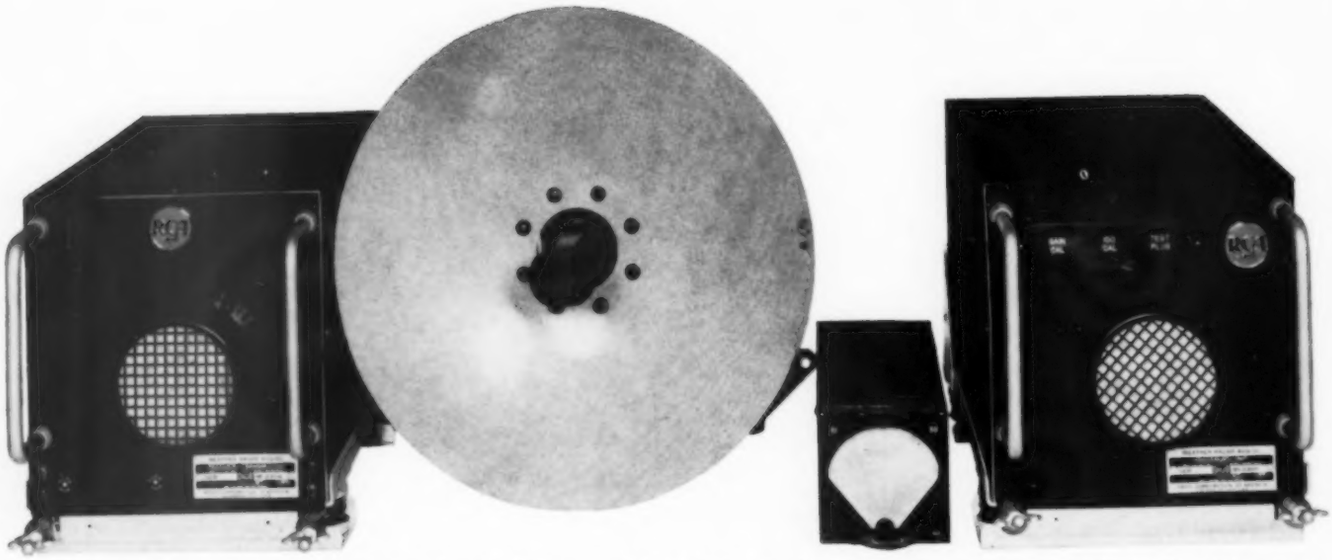
The Marine Corps was practically restricted to quarters in new shelters that looked like Eskimo igloos.

The Navy hangar was packed with interesting exhibits which extended

(Continued on page 61)

Transports are air power, too, and the Air Force paraded these three new turboprop Lockheed C-130 Hercules troop-cargo carriers. Usually seen one at a time on long-range flights, majestic if obsolete Convair B-36 bombers were flown in droves at the show. Here's a formation of five (below).





Here's the complete RCA AVQ-50 weather avoidance radar system. Left to right are the receiver-transmitter unit, weight 21 lbs; dish antenna, diameter 12 inches; instrument panel indicator, size 3.25 inches square and weight 3.5 lbs.; and accessory unit (power and timing), weight 19 lbs. Total system weight, 50 lbs.

Lightweight Radar for Small Twins

New RCA weather avoidance radar features small antenna, bright picture

By JOHN WHITEHEAD
Radio Corporation of America

THE enthusiastic acceptance of weather radar by the operating departments of the airlines indicated from the first that the use of radar by operators of business aircraft would greatly increase their utilization, scheduling and passenger comfort. Installations of the airline-type equipment in a large number of business aircraft in the DC-3-Lodestar-Convair 340 category proved this to be true. However, the weight and physical size made its installation in aircraft such as the Aero Commander and Beech 18 impractical. Radio Corporation of America, with their extensive background in airborne radar for both military and commercial applications, recognized this requirement and initiated a project to do something about it. The result — RCA's new AVQ-50 Weather Avoidance Radar.

This new system was designed for installation in aircraft where space for mounting a radar scanner in the nose is limited, and where weight and power requirements are a major factor. Weight for the system, not installed, is less than 50 pounds. Power requirement for the set is approximately 500 volt-amperes of 400 cycle AC; no DC is required. All of the units are compact, permitting location in otherwise unusable areas of the nose section, baggage compartment, or radio rack of the aircraft.

AVQ-50 WEATHER AVOIDANCE RADAR CHARACTERISTICS

GENERAL
- **Complete System—Four major units with control panel kit.**
- **Overall Weight—50 pounds, not installed.**
- **Type Presentation—80° sector PPI display, offset.**
- **Primary Power—Approximately 500 VA of 115 volt plus or minus 10% 380-420 CPS AC.**
- **Operating Frequency—9375 plus or minus 40 megacycles.**
- **Ranges—10 and 50 miles.**
- **Altitude—16,000 feet.**

RECEIVER/TRANSMITTER
- **Size—Short ¾ ATR**
- **Weight—21 pounds**
- **Power Output—40 kw peak**
- **Repetition Rate—400 cycles (synchronized to line frequency)**
- **STC—Fixed**

ACCESSORY UNIT
- **Size—Short ¾ ATR**
- **Weight—19 pounds**

ANTENNA
- **Reflector Size—12 inch parabola**
- **Weight—5½ pounds**
- **Scan rate—85 "looks" per minute**
- **Type scan—Sector PPI**
- **Antenna Pattern—7° pencil beam**
- **Tilt—10° up or down**

INDICATOR
- **Size—3¼ inch square frontal area, 10 inches long.**
- **Weight—3½ pounds**
- **Mounting—Standard 3⅛" instrument panel cut-out**
- **Controls—Intensity**

The indicator is built into a standard instrument case and may be mounted in a cut-out for any 3⅛-inch instrument. This permits the operator to juggle the flight or engine instruments to allow installation of the indicator at any desired location on the instrument panel. Two ranges are used, 10 and 50 miles, and may be selected from the control panel. The 80-degree sector PPI presentation is offset to the lower edge of the indicator face, providing a maximum amount of viewing area. The indicator's scanning rate of 85 "looks" per minute, which is slaved to the antenna, paints the scope face more than five times faster than that of the larger airline type equipment. This gives a brighter picture and eliminates the necessity of using a hood under most conditions. Iso-echo circuitry is employed to indicate the areas of heaviest precipitation which cause severe turbulence.

The receiver-transmitter is packaged in the standard short ¾ ATR form factor, and is designed for plugging into a conventional shockmount equipped with a wave-guide quick disconnect. The transmitter power output is better than 40 kw. A blower is provided on the front of the equipment for ventilation. A ferrite load isolator will be offered as optional equipment. This probably will not be

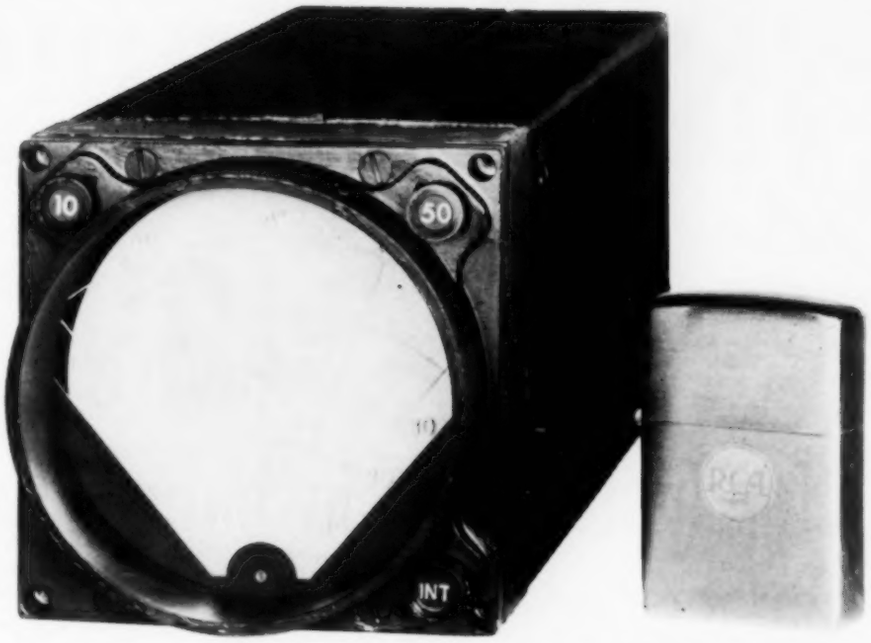
required for most installations because the receiver-transmitter will be mounted in the nose section, permitting a short wave-guide run to the antenna.

The accessory unit, which supplies power and timing for the entire system, is also housed in a short ¾ ATR package and mounts on a conventional shockmount. The "sub-chassis" type of construction used in RCA's AVQ-10 Weather Penetration Radar was also employed in the AVQ-50 to allow easy accessibility for maintenance. Silicon diodes are used in the power supply instead of the conventional vacuum tube rectifiers.

The antenna uses a 12-inch dish which sector scans 40 degrees each side of dead ahead, providing over-all coverage of 80 degrees. The beam can be tilted up or down 10 degrees from the control panel, and a meter is provided to indicate the direction and degree of tilt. The antenna was designed for easy installation, mounting to the bulkhead with four bolts. Structural beef-up of the bulkhead mounting area is minimized because of the light (5½ pounds) weight of the entire antenna assembly. Stabilization is not included in the interest of simplicity and weight.

A control panel kit of parts is supplied for incorporation in the combined radio control panels normally found in business transports, or the parts may be built into any convenient location on the instrument panel. The control functions include off-standby-10-50, tilt up-down, contour-normal, gain, and cursor lights.

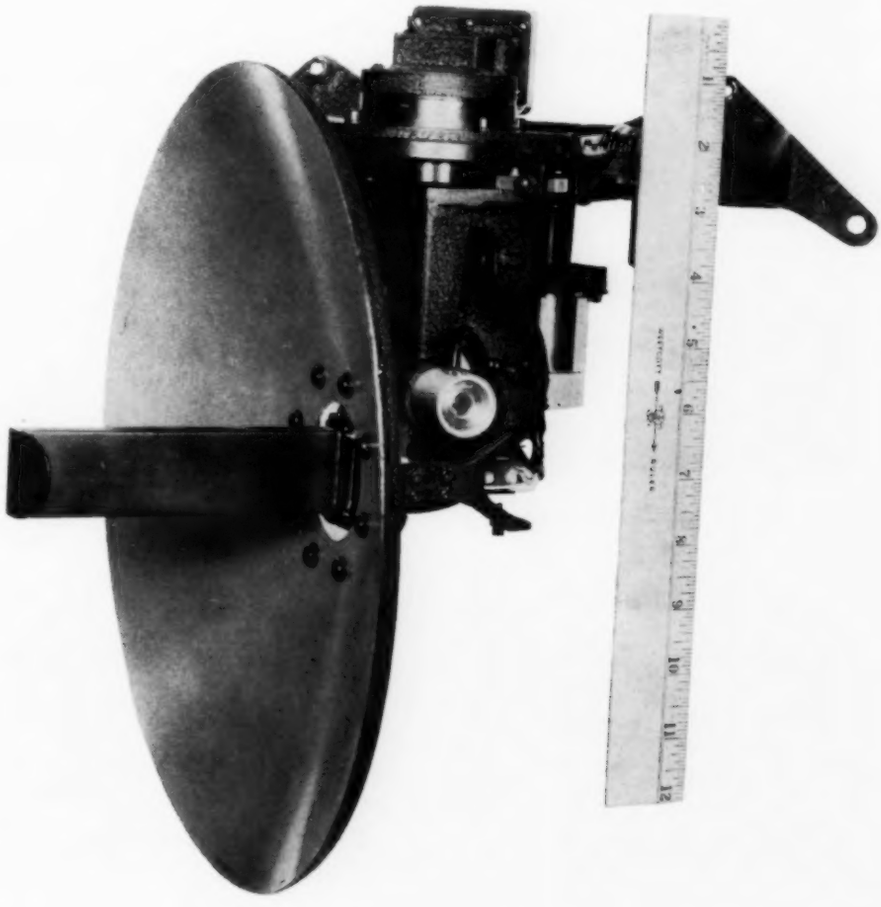
The design criteria for the AVQ-50 was based on the operational differences between the airlines and the business aircraft operator. The maximum range of 50 miles was considered adequate for aircraft with cruising speeds under 300 miles per hour, since this allows ample time for the crew to select a new heading which will avoid the weather ahead. The absence of antenna stabilization should pose no problem to the operator of the lighter transports. In larger aircraft, the requirement for stabilization is predicated on a radar-equipped aircraft encountering some turbulence and change of attitude while navigating corridors between areas of severe turbulence, and the need to "see" the turbulent areas constantly during this close work is greater. The accepted practice of operators of aircraft with lower wing loadings is to avoid the weather rather than to penetrate it, due to the more pronounced effects of turbulence.



AVQ-50 indicator fits standard 3⅛-inch cutout on instrument panel. It has three controls — one for intensity, one for 50-mile range and one for 10-mile range. Scope is scaled for readings covering 80 degrees, 40 degrees to each side of the aircraft heading, and in 2-mile and 10-mile range markings. Cigaret lighter gives comparative size.

The operating frequency of 9375 megacycles was selected in the interest of saving weight and space due to the use of smaller components, and to permit the use of a dish small enough for installation in the nose of lighter and smaller aircraft. The 12-inch antenna dish has a beamwidth of 7 de-

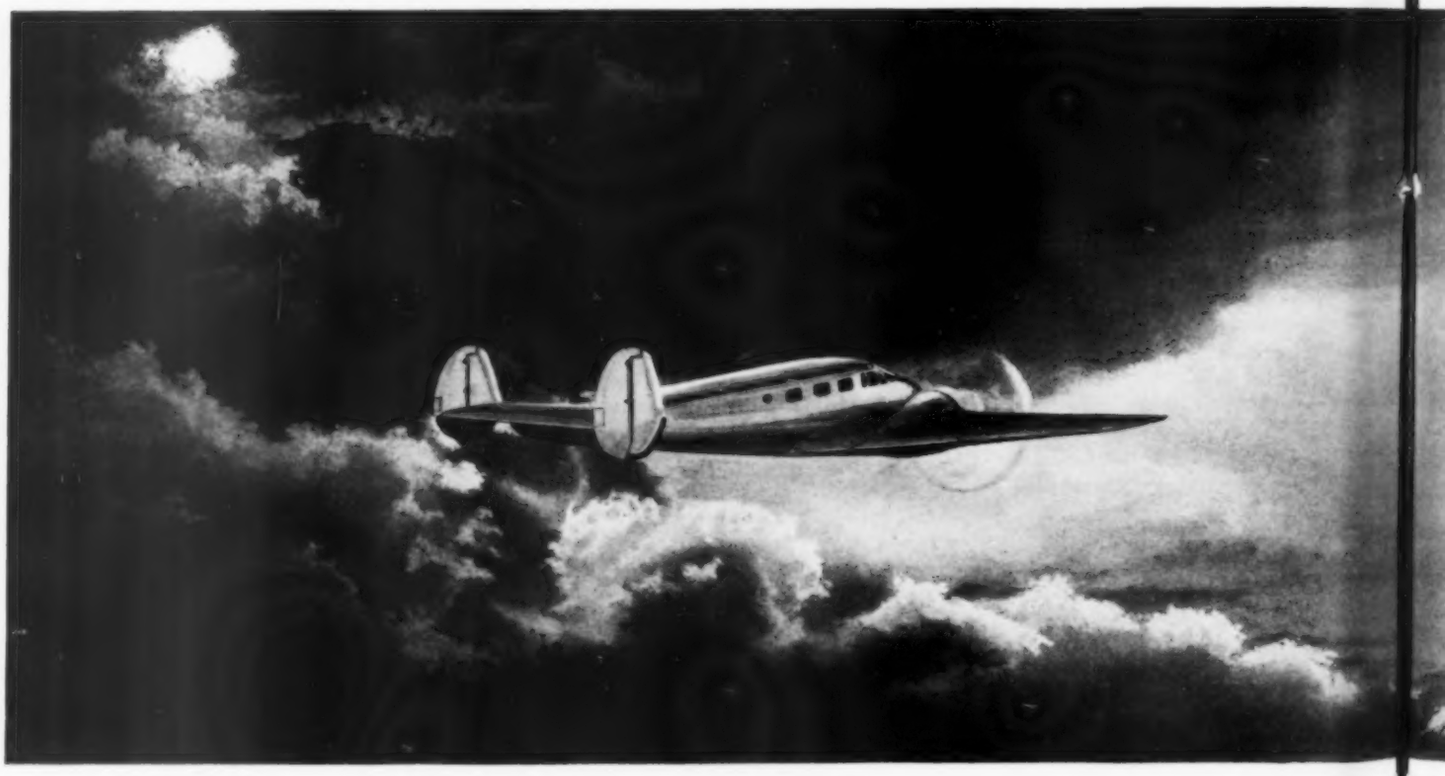
(Continued on page 56)



Ruler pictured with AVQ-50 antenna shows smallness of its 12-in. dish. This antenna scans 40 degrees each side of center, painting the scope with 85 "looks" a minute at a rate 5 times faster than with larger units in transports, giving a brighter picture.

RCA announces a avoidance

for installation in aircraft where weight, space, and power are at a premium.



RCA

Address Inquiries to

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RADIO CORPORATION of AMERICA

11819 W. OLYMPIC BLVD., LOS ANGELES, CALIF.

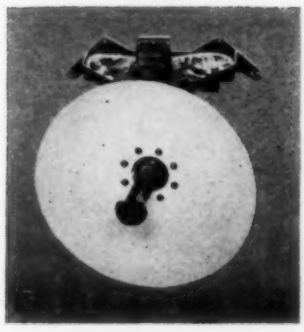
new weather radar, the AVQ-50

Indicator—actual size for Standard Instrument-Panel Mounting

Accessory Unit

Receiver-Transmitter

Antenna



Typical Antenna Installation in Beech D-18

Mock-up of the 8-10-place Fairchild M-185 executive transport, to be powered by four Fairchild J-83 jet engines of 2,000 lbs. of thrust each. Cruising speed will be more than 500 mph. Door is between cockpit and cabin. Main gear retracts into fuselage. Price will be near $750,000. —(Fairchild Photo.)

Sooner or Later

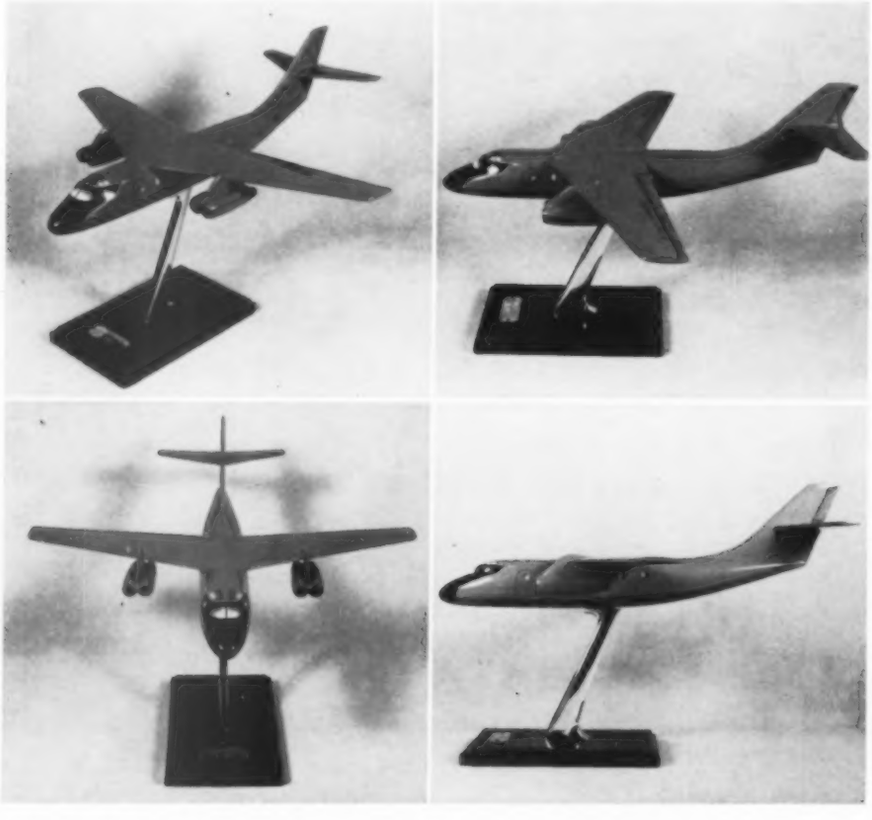
PERSISTENT hangar talk in recent years in behalf of the need for a jet business plane is now being followed by more realistic developments such as the Air Force's recent request to the industry for light multi-jet transport designs and Fairchild's announcement that Continental Can Company has become the first corporation to order its 4-jet, 550-mph., 10-place M-185. Whatever happens to these two developments, a business jet capable of 500 mph. or more is bound to come — just as soon as some manufacturer convinces himself that the need for this type of private transportation is here today, as some corporate executives and pilots have already convinced themselves.

Beech has its option on the small, twin-jet, Morane-Saulnier 760 "Paris" now being certificated in France by the CAA's team abroad. Lockheed and North American have 8-10-place multi-jet transport designs for the off-the-shelf Air Force project. But the Fairchild M-185 probably will be the first of these wonderful projects to reach the corporate market. Because of this, it deserves serious consideration, such as far-sighted General Lucius D. Clay of Continental Can has already given it. Continental Can has ordered three of the Fairchilds and deliveries in 1960-61 are hoped for. A prototype of the M-185 is scheduled to fly in late 1957 or early 1958, according to W. L. Landers, Fairchild vice president and general manager of its aircraft division at Hagerstown, Maryland.

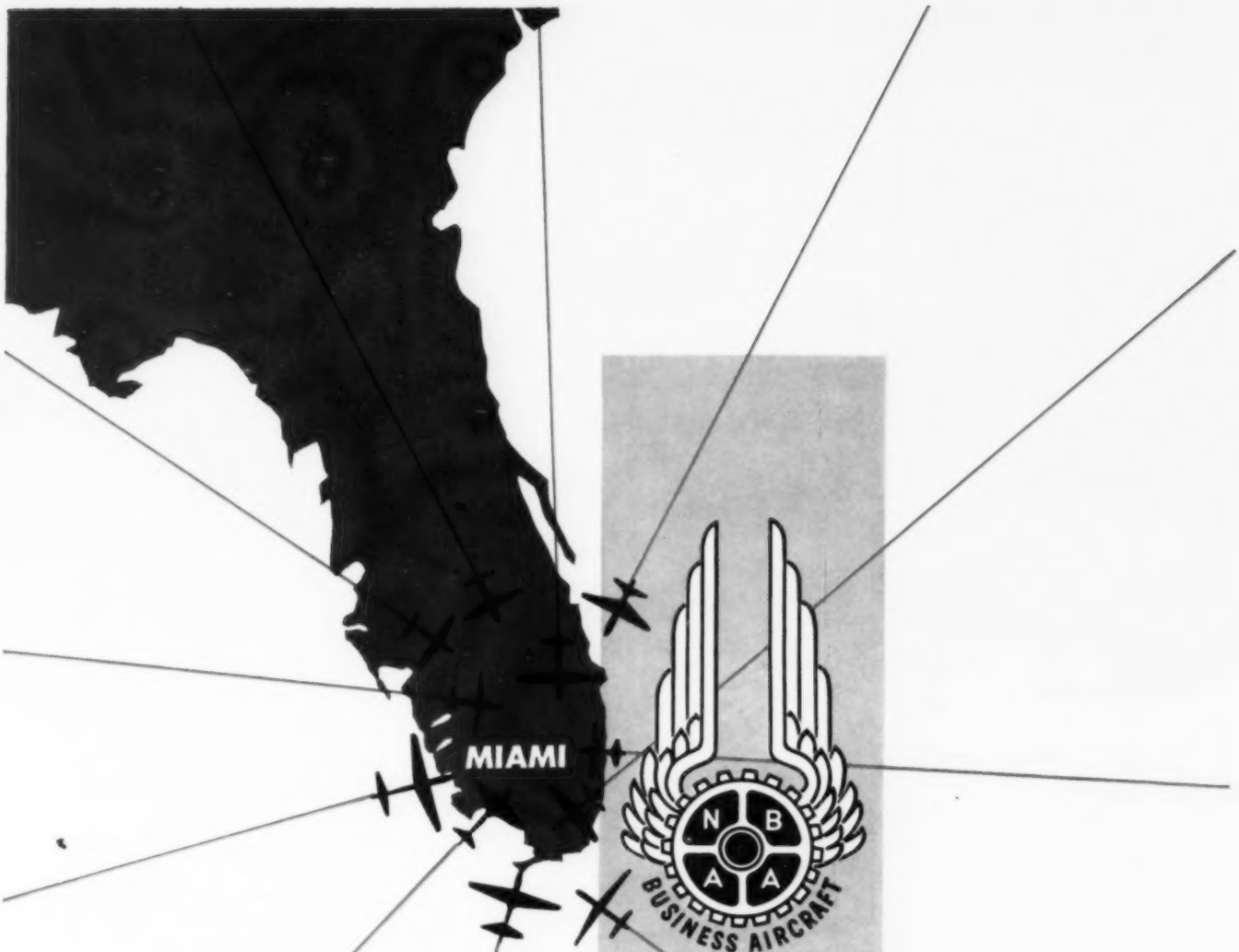
It is believed that the Continental Can order was signed on the understanding that the M-185 will be priced at $700,000-$800,000, although it is difficult to see how any firm commitment could be made this far in advance of construction. Wind tunnel tests haven't even been completed.

But Fairchild's proposed performance figures make the M-185 sound like the answer to the corporate executive's fondest dreams — speed in the neighborhood of the performance promised for the 1959 Boeing 707 and Douglas DC-8, but at an operating cost competitive to that of the

(Continued on page 51)



Desk model of the Fairchild M-185 is pictured here from several angles to show its interesting high-speed design. Markings indicate spoilers located ahead of the ailerons. —(Fairchild Photos.)



Dallas Airmotive Salutes the NBAA

Dallas Airmotive is pleased to salute the National Business Aircraft Association on the occasion of its Ninth Annual Forum to be held in Miami October 23-25. As the engine overhaul agency for many members of the NBAA, Dallas Airmotive is proud to be a member of this progressive and outstanding organization.

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Although the standard Cessna 620 pressurized cabin will have 5 sleeperette chairs, this custom interior version was displayed by the factory in a new and luxurious mock-up. It contains 5 chairs and a 3-place divan. Cockpit is to left, lavatory and baggage to right. Cabin inside dimensions are 6 ft. ceiling, 13-ft. 3-in. length and 5-ft. 8-in. width. Floor plan is rectangular with straight and parallel sides. Seats and tables mount in slotted tracks running cabin length, with notches at 1-in. intervals for variety of spacing. Entry for cabin door with integral steps is at right in the photo. Pressurization provides 8,000-ft. cabin altitude when plane is at 18,000 ft.

FOUR-ENGINE CESSNA

(Continued from page 25)

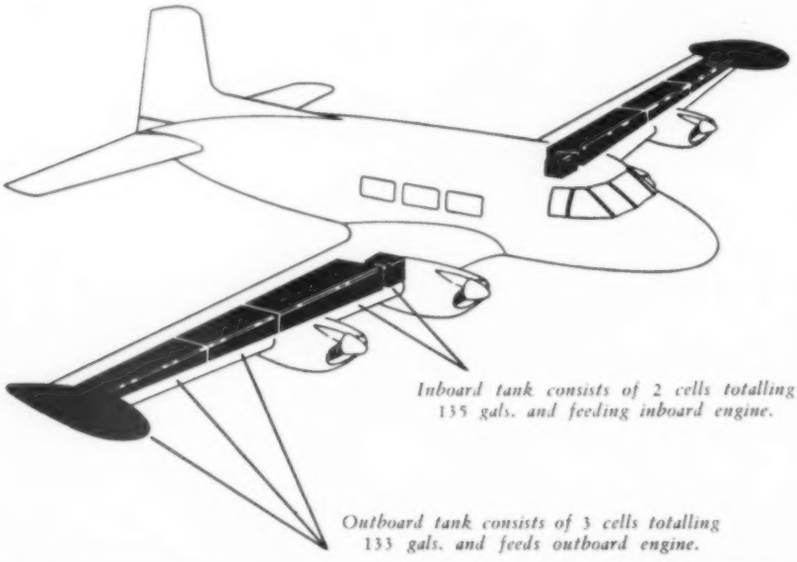
and a cabin interior consisting of 5 sleeperette chairs and one card table.

If the useful load remains at 5,000 lbs., it should adequately provide for full fuel (535 gals.) and oil (20 gals.) at 3,370 lbs.; crew of two and 6 passengers at 1,360 lbs., and 270 lbs. of baggage.

Partial power performance for cruising and fuel consumption figures have not been released. The maximum cruising speed of 260 mph. at 12,500 ft. at 2,600 rpm. is apparently obtained with about 75% hp. Maximum range of 1,700 miles is given for optimum but unspecified power at 15,000 ft., and endurance is said to be 9 hours at 55% power. It is known that a fuel consumption of 75 gals. per hr. is reflected in design considerations behind the Model 620. Fuel consumption must also take into account operation of the 55-hp. AiResearch gas turbine which provides cabin pressurization, air conditioning, heating, ventilation and power from an electrical generator it drives. This turbine's design fuel consumption is probably close to 10 gals. per hr. and it uses fuel from the airplane's main supply of 100-octane gasoline.

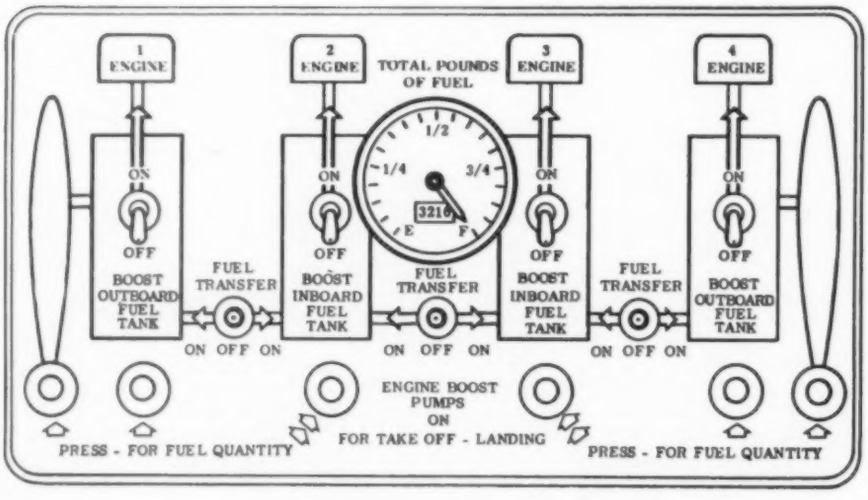
Ralph Harmon, 620 project engineer, told visiting executives and pilots that the airplane has exceeded expectations in its first 25 hours of flight testing. He would not go into detail, but Test Pilot Dale Westfall demonstrated the 620 in a fly-by in front of the visitors at the new Wichita Municipal Airport. He was off the ground and climbing with gear up in less than 2,000 ft., accelerating rapidly in the take-off run and flying off at less than 100 mph. The airplane was at or above 15,000-lb. gross because it had been loaded with ballast

(Continued from page 54)

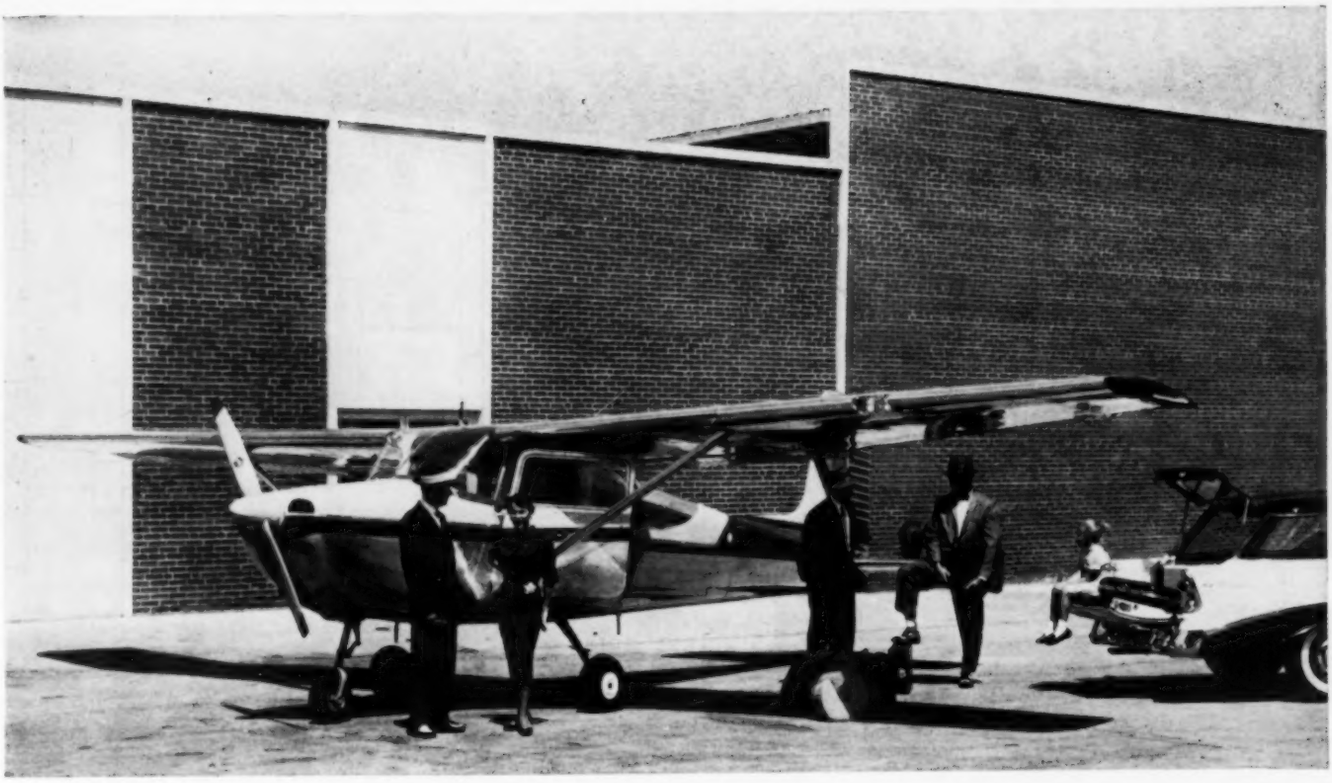


Inboard tank consists of 2 cells totalling 135 gals. and feeding inboard engine.

Outboard tank consists of 3 cells totalling 133 gals. and feeds outboard engine.



These Cessna sketches detail Cessna 620 bladder-type fuel tanks and cockpit panel outlining fuel management controls. Total fuel capacity is 535 gals., all outboard of the inboard engines. All fuel on board can be used in any engine by transferring. When boost pump and transfer switches are used, arrows on panel (mounted on control pedestal in cockpit) light up to indicate fuel flow direction. Quantity gauge indicates total pounds of fuel available or amount in any tank when appropriate button is pressed. Total oil capacity is 20 gals., 5 gals. in each wet-sump engine.



New exterior colors for 1957 Cessna 172 are Mandarin orange and Persian maroon, with Cardinal red and Strato blue also available. Light cream striping is used. Spacious interior is offered in three shades of tan or blue. —(Cessna Photos.)

1957 Cessna Model 172

FIRST new 1957 lightplane model publicly shown this Fall is the latest version of the popular 4-place, tricycle Cessna 172. Cessna distributors and dealers exploited its appearance with open house celebrations at their bases of operation throughout the country at the end of September. For this promotion, the Cessna factory at Wichita delivered more than 230 of the new models to its outlets in a 9-day period, this averaging one new demonstrator per outlet. The 172 received unprecedented acceptance following its 1956 introduction and more than 1,100 deliveries were made during its first year on the market.

The new version, incorporating instrument panel and interior refinements as well as a new exterior color scheme, is priced at $8,975, which is $225 higher than the 1956 model.

Powered by a 6-cylinder Continental O-300-A engine, the 2,200-lb. Model 172 has a useful load of 940 lbs. and one of the roomiest, most comfortable interiors in the 4-place field. Its

(Continued on page 52)

Variable-incidence wing set for take-off, its leading edge slats drooping, the Chance Vought F8U-1 Crusader is pictured ready to go on its desert flight which set a new speed record of 1,015 mph. NAA Timers Clyde Barnett and Barograph Expert Charles Kepnet check gear before hop (left).
(Chance Vought Photos by Art Schoeni.)

Record for Crusader

A NEW national speed record of 1,015.428 miles per hour has been established by the Navy's new Chance Vought F8U-1 Crusader and the record run, though deliberately held below the airplane's maximum capabilities because of Pentagon policies, has won the Thompson Trophy for 1956. The old record was 822 mph., set by a North American F-100C last year.

Behind the record is an interesting and intricate saga of conducting a new speed mark in this day of revolutionary strides in air progress. Whereas National Aeronautics Association timers used to click stop watches to measure an airplane's run over an ordinary speed course, scientists have now enmeshed the business of record breaking with Buck Rogers gadgetry and unheard-of preparations requiring the talents of many experts other than the pilot. In the Crusader, he was Navy Commander R. W. (Duke) Windsor.

The course, located on the desert at China Lake, California, measured 15.1 kilometers (about 9.3 miles). At each end of the course, cameras with 10-in. telephoto lenses aimed straight up recorded the Crusader's passage, with the time also recorded. Along

(Continued on page 51)

Fuel for record flight was pre-cooled to below freezing by pumping through coils in vat of fuel chilled by dry ice (left), 10% more poundage being loaded in this manner. Man in desert squat is NAA Timer Bert Rhine sighting up wire marking one end of the speed course. Pilot Duke Windsor is pictured below after the record run, being congratulated by Vought crew headed by Paul Thayer (coat).
(Chance Vought Photos by Art Schoeni.)

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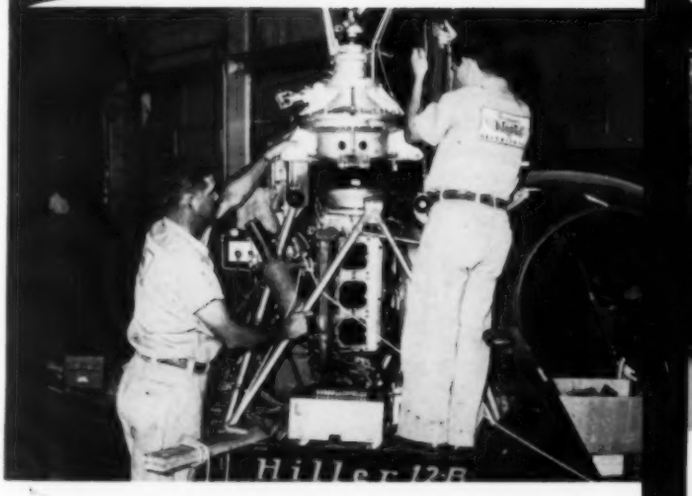

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San Antonio, Texas

ANDERSON AIR ACTIVITIES
General Mitchell Field, Milwaukee, Wisc.
Truax Field, Madison, Wisc.

ATLANTIC AVIATION CORP.
Teterboro Airport
(25 minutes from Times Square)
Teterboro, New Jersey
Logan Airport, East Boston, Mass.

ATLANTIC AVIATION SERVICE, INC.
New Castle County Airport, Wilmington, Delaware
Philadelphia International Airport, Philadelphia, Pa.

BUTLER CO., AVIATION DIVISION
Municipal Airport, Chicago, Ill.

CURREY SANDERS AIRCRAFT CO., INC.
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GRAY AIRCRAFT SVC. CO., INC.
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ELLIOTT FLYING SERVICE
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★ **GOES FARTHEST** — with wing fuel tank cells, the Beechcraft Bonanza flies 1170 miles non-stop.

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THE LONG-HAUL PERSPECTIVE

Aviation Needs Basic Formula For Merchandising

What course will be followed for distributors, dealers, territories?

By HENRY J. HAMM
Henry J. Hamm & Associates,
Sales Consultants

THERE is an old adage, greatly overworked in the aviation business, which has to do with a desire to separate the men from the boys. The application of this thinking concerns the ethics of merchandising in the aviation industry and particularly in its private and commercial aspects. This separation has been greatly accelerated in the last couple of years. There are many factors that have contributed to this desirable situation.

The aviation industry, generally speaking, can be considered as evolving from the toddling infancy stage to that of full maturity, from the standpoint of merchandising its products. But there is still a long path to travel, and a tremendous amount of pioneering that must be done before it can be said that selling in the aviation industry has been established on a firm and sound footing.

A great many problems that beset this newest of American industries have been solved. Others still remain to confuse and, to a great extent, deter the advancement of the industry saleswise. Distribution and merchandising of aircraft industry products are still the greatest problems that must be overcome before the industry can move out in full stride. Many of us have not been aware of this. Therefore, we have done nothing, or, at the most, very little, to set up sound and acceptable merchandising policies. We have been content to go along as circumstances dictated, attempting to tailor our policies almost on a day-to-day basis.

It is time for an appraisal to discover, as best we can, what the fundamental policies of the industry should be, based on a long-haul perspective, to discover what factors are strictly peculiar to our own industry and to adjust our sales thinking to a predetermined policy. As has been the case in other industries, certain customs have cropped up in aviation selling, some good and some bad, some basically as sound as those in other industries and some so unethical as to become detrimental to a sound business growth. The future thinking of the industry must take all of these customs and habits into consideration, and by a planned process of approach, those practices which are a detriment to good sales policies should be eliminated.

Since the industry itself revolves around or is founded primarily on the sale of the aircraft, it naturally follows that the industry's policies and patterns will be determined to a great extent by the manufacturers of the aircraft. Manufacturers of accessory equipment will be expected to follow the lead of the airframe manufacturers, but only so long as those policies are sound. At the present time, the industry's merchandising at the airframe level closely parallels the lines of the established automotive industry.

Distribution is generally accomplished with a distributor-dealer type organization, but with variations. It has been the custom for the manufacturer to establish a distributor with a particular area of responsibility. In some cases, the distributor is given a quota of sales which he is expected to accomplish. Usually, the distributor is confined to particular geographical boundaries. Within that territory of responsibility, he is expected to establish dealers who purchase products through him, and this enables him to reach a predetermined yearly goal for the sale of units.

In practice, this organization works out very well. However, due to the fact the distributor discount from the manufacturer also anticipates a discount to the dealer, there is a tendency in some quarters and among some distributors to accomplish the sales of the products he represents directly to the ultimate customer, thus by-passing the established dealer. The distributor thereby takes the full discount. This practice has had a tremendous influence on sales effort at the dealer level. When this happens, the dealer hesitates to put forth any sales effort to promote the distribution of products which, presumably, he is expected to represent, but which, in fact, may be sold directly by his distributor without any credit or profit accruing to the dealer.

This by-passing of the dealer organization must be discouraged if the manufacturer and distributors of the products are to have the benefit of dealer sales organizations. The distributor-dealer type of merchandising is predicated on the assumption that there is sufficient capital to support this type of an organization. Such

financial support has not always been available. In fact, the exception of this is generally true. The result has been lack of properly-financed distributors and dealers, which in some instances has caused the manufacturer to establish direct factory dealers or direct factory branches. The direct factory dealer differs from the conventional distributor set-up only in that they do not maintain their own dealer organization, generally receiving a smaller discount, and are not required by the manufacturers to carry as large a stock in their inventory as a distributor operating along the conventional lines. Distributors or factory dealers, as the terms are generally applied in the aircraft industry, are organizations privately owned that may, or may not, exclusively represent the products of a particular manufacturer, usually with a clearly defined territory, or if not a defined territory saleswise, at least to an area of responsibility in which they are expected to promote the sale of manufacturer's products.

In some instances, there is no clearly defined territory and the distributor and dealers are permitted to make sales wherever they may find a customer. This is based on the theory that the distributor or dealer in a particular territory has not fully promoted the sale of the products he represents, and a distributor foreign to the territory finds the customer. The loss of the sale represents in effect to the distributor, the penalty for lack of proper territorial representation. At least so far as the sales of most aircraft are concerned, territories are clearly defined and a distributor or dealer who sells products in the assigned territory of another distributor or dealer is subject to have his profit, or part of his profit, on the transaction diverted to the distributor or dealer to whom the territory has been assigned by the manufacturer.

The accessory manufacturers usually do not have any such provisions for territorial protection. One of the main reasons advanced for not setting up territorial confinement by the accessory manufacturers has been that in many areas the manufacturer's franchise may be held by an organization that does not, and can not, put forth enough sales effort to reach the potential customers in this area and, due to this fact, the accessory manufacturer usually does not require his outlets to handle his product exclusively but permits them to represent competitive products. There is always the possibility that if a distributor was given an exclusive and closed territory, he might hold his franchise inactively

(Continued on page 58)

DARE announces its new...

360 Channel VHF Transceiver

with 15-watt Transmitter Output

A new DARE Communications transceiver, born of consumer demand, and developed to maximum usability by DARE engineers is now ready. The new DTR-360 features great compactness, with maximum power and sensitivity. Moderately priced, it is ideal for executive, corporate, military or transport requirements. The entire unit, including dynamotor is built on a ½ ATR frame, mounted for maximum protection on latest type metal-mounts.

Look over the specifications. Then ask your DARE distributor to tell you more about this fine product.

Brief Specifications

Receiver Sensitivity—2 microvolts or better for 150 milliwatt output. Highly selective circuit employs double conversion. Audio output up to 8 watts for loud and clear speaker reception or headphone use. Adjustable squelch.

Transmitter—Power Output at least 15-watts on any channel. Frequency stability .01% or better. Eight ruggedized tubes.

Power Supply—Dependable dynamotor type. Two voltage regulator tubes provide drift free operation of all critical circuits. 14 or 28 volt input, as desired. Also includes transmitter modulator and receiver power output stages.

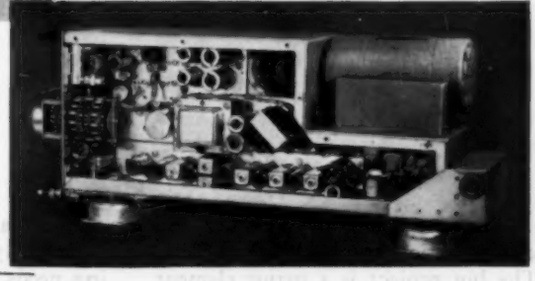
Physical—(with shock mount) Overall size 9¾" high x 23⅜" long x 5" wide. Net weight 24 lbs. complete.

180 or 360 Channel Operation—Available for either 180 or 360 channels. On 180 operation you get a crystal controlled channel every 100 kilocycles all the way from 118.0 megacycles to 135.9 megacycles. On 360 channel operation you have a crystal channel every 50 kilocycles over the same range.

Simplex or Cross Channel (Duplex) Operation—With a single DARE backlighted control you receive and transmit on the same selected channel. With two DARE controls you can receive and transmit on different channels, if you so desire.

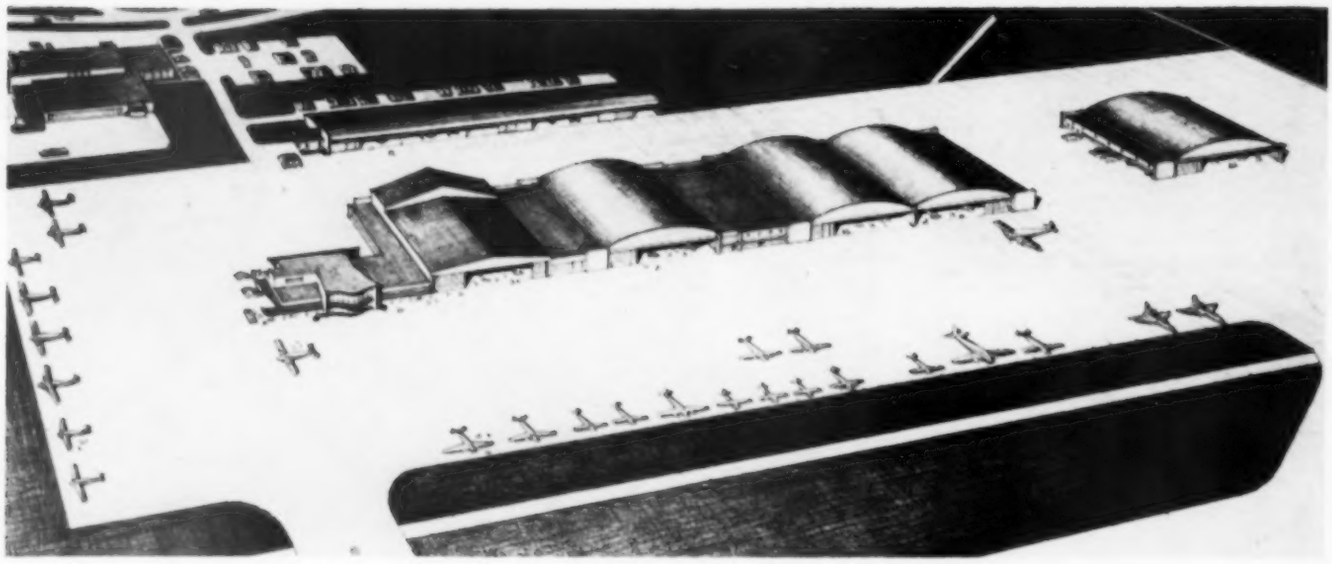
Economical Crystal Saver Circuit—DARE engineering has devised a unique circuit requiring only ten frequency wires to connect the control to the transceiver. Only 38 crystals are required for 180-channel operation and only 58 for 360 channel.

Easy on the serviceman, too—The new DTR-360 was designed for economical servicing. The entire unit is "unitized," has separate chassis for receiver, transmitter, and power supply elements. All tube testing and service alignment can be done from one side, which is easily accessible. Front panel jacks make transmitter metering easy.



See your Dare Distributor or write . . .

DARE, INC.
TROY, OHIO



Architect's sketch of the new Southwest Airmotive base in Dallas shows 800-ft. long, 5-section hangar and shop building in center of a 1,600-ft. by 930-ft. concrete ramp. Private business flying terminal and lounge adjoins it on the left and 400-ft. by 80-ft. "Plane-O-Tel" is across the ramp behind it. Hangar at far right is for private large-plane storage, and elevated roof at rear of Hangar 1 marks storage for Convair-height executive planes. Building at upper left is a general office center for the company. Inside storage for 200 planes and ramp space for 400 others are provided in the $4,000,000 project. Architects are Goodwin & Cavitt of Dallas.

Southwest Airmotive's New $4,000,000 Base

CONSTRUCTION has been started on a new $4,000,000 business flying service center by Southwest Airmotive Company on Love Field in Dallas — the most ambitious expansion program yet undertaken by a business flying service institution. It will take five years to complete, will provide inside storage for 200 planes with outside ramp space for 400 more and has fueling facilities tripling the firm's existing capacity, which pumped more than 4,000,000 gals. of fuel into airplanes last year.

Half of the project is under construction now at a cost of $2,225,000. It will encompass a 5-section hangar and terminal building 800 ft. long and 160 ft. wide, plus a new "Plane-O-Tel" measuring 400 ft. by 80 ft. These two structures, located in the center of a large new concrete ramp measuring 1,600 ft. long and 930 ft. deep, will be completed for a gala opening in mid-1957 commemorating Southwest Airmotive's 25th anniversary as an aviation service institution.

Scheduled to be added within five years are a two-story, air-conditioned distributor-sales and general office building, a large-plane storage hangar, an air freight terminal and office and a large addition to the Plane-O-Tel.

The big project is a major element in a general rehabilitation and improvement program on Love Field in which a new $7,000,000 airlines terminal is being completed across the airport from the present terminal. The new structure completely consumes all of the space Southwest Airmotive has occupied on the south side of the field, necessitating relocation of its site on the east side of the airport where the firm obtained a 35-acre lease for 25 years with a 10-year renewal option, the rental being $450 per acre per year. Initial construction is being financed largely through a $1,500,000 municipal revenue bond assigned to Southwest Airmotive, which will repay that amount in 15 years. Private financing will provide the remainder of the expansion funds.

"Aside from establishing large-scale modern facilities designed for business flying activities as we have learned them in 25 years of service, this new arrangement guarantees in our contract from the city that the landing facilities of Love Field will not be barred to business and private flying for at least 35 years," commented Winston Castleberry and George W. Jalonick III, executive vice presidents of Southwest Airmotive. "It also enables us for the first time to expand our storage and servicing facilities sufficiently to satisfy the fast-growing needs of our customers."

The firm will continue to operate its large engine shop permanently located on privately-owned land on the northwest side of the field and will also continue to operate its new jet engine test facility located adjacent to nearby Amon Carter Field between Dallas and Ft. Worth. Its new Love Field facility has already been equipped with a 219,000-gal. fuel and oil storage depot which almost triples the capacity of its former system. Southwest last month pumped more than 400,000 gals. of fuel into aircraft, including military transients.

Activities on the new base will center around a large, two-story, air-conditioned Southwest Airmotive business flying terminal which will be completed in the first phase of the expansion. The main lobby will be wood-paneled, its terrazzo floor carrying the SAC emblem, and will feature a "free-hanging" stairway, shadow-box display cases and modern decor. Adjacent will be a separate pilots lounge, a large and completely-equipped flight operations department, rental car office, executive offices, locker rooms for customers and line service headquarters. On the second floor will be a large, luxurious lounge and dining area and a curving lunch bar. Aviation meetings for up to 100 persons can be held in this plush, glass-enclosed area overlooking the instrument runway.

★ ★ ★

FIRST SKIMMER AMPHIBIAN manufactured by Colonial Aircraft Corp., Sanford, Maine, is shown at right on take-off and being delivered to Louis Huck, Jr. (center) by David B. Thurston (right), Colonial president, with Roger Guerard of CAA looking on. Huck is Skimmer distributor at Greenwich, Conn. The new 3-pl., all-metal, pusher is priced at $15,750 and is being produced at a rate of two planes a month which will be doubled soon. It has cruising speeds up to 123 mph.

AIR REPORT

(Continued from page 5)

DELIVERY OF 2,315 LIGHTPLANES represents 50 per cent of all deliveries by the 7 manufacturers comprising the AIA's Utility Airplane Council for the same period. Billings at the manufacturer's net price totalled $27,598,000 for Cessna, representing about 38% of the total billings of $72,132,000 by all 7 manufacturers. In other words, 1 out of every 2 new lightplanes sold was a Cessna and 38 cents out of every dollar received by manufacturers for new lightplanes in January-August went to Cessna.

EIGHTH ANNUAL ALL-TEXAS AIR TOUR Oct. 13-20 will cover more than 3,000 miles on a circuit of the state, starting at Temple and ending in Corpus Christi with overnight stops at Beaumont, Shreveport, Brownwood, Plainview, Carlsbad, Fort Clark and McAllen. Asa Burroughs, tour director, said entries have already been received from 14 states and Mexico and said the tour is open to plane owners from any section of the nation.

GRASS-ROOT CANDIDATE BEING PROPOSED TO SUCCEED CAA ADMINISTRATOR CHARLES LOWEN, who died of cancer last month, is James D. (Jay) Ramsey, former director of aviation for the state of Nebraska and now connected with Val Peterson's Office of Civil Defense. Ramsey's campaign originated in the Middle West without his knowledge but now has his blessing.

HEART ATTACKS LAST MONTH TOOK THE LIVES OF TWO OF AVIATION'S MOST COLORFUL OLDTIME PILOTS, Frank A. (Pop) Bloss and Slats Rodgers, both of whom became Texas legends while they still flew. Bloss, who learned to fly in 1912 and was still actively flying at the time of his death, was the nation's oldest active pilot in the number of years of flying. He was employed by the Sun Valley Dusting Company of San Benito, Texas. Rodgers, who recently co-authored with Hart Stilwell an autobiography, "Old Soggy No. 1," gained notoriety during the bootleg days following World War I and after many brushes with the law, settled down to legitimate cotton dusting until his retirement in 1949. . . . **WAYNE WEISHAAR,** executive secretary and treasurer of the Aeronautical Training Society, suffered a stroke and died in his Washington office late in September. He was 60. Weishaar had a brilliant newspaper career prior to his affiliation with ATS in 1943. Former aviation editor of the New York Herald Tribune (1929-35), he spent ten years with the Associated Press and Des Moines newspapers following military service in World War I.

AN ATTITUDE INDICATING SYSTEM FOR HELICOPTERS has been developed by Lear, Inc., for improved instrument flying in rotary-wing aircraft. The new vertical gyro indicator, Model 4005H, is transistor-

Airmen's Calendar

Oct. 13-20—8th Annual All-Texas Air Tour.

Oct. 15-21—Short Course for Aerial Applicators, Ohio State University.

Oct. 17-18—8th Annual Indiana Aviation Conference, Turkey Run State Park.

Oct. 24-26—9th National Business Aircraft Assoc. Meeting, Miami.

Nov. 1-3—17th Annual National Aviation Trades Association Convention, Hotel Chase, St. Louis.

Nov. 14-15—AIA Export Conference, Miami Beach, Fla.

Nov. 25-27—28th Annual ADMA Meeting, Drake Hotel, Chicago.

ANDRAU AIRPARK FESTIVITIES IN HOUSTON recently included ceremonies by Owner Bob Wolf, a lieutenant in the Harris County Sheriff's Posse, making Comedian Joe E. Brown an honorary deputy during the reunion of China-Burma-India Veterans. Left to right are Wolf, Brown, Deputy B. E. (Ug) Williams, and Mr. and Mrs. Bob Nesmith. Nesmith, national commander of the C-B-I group, piloted the comedian to Houston for the reunion.

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Cruse Aviation, Inc.
International Airport
and Clover Field Airport
Houston, Texas

Dal-Tex Aviation, Inc.
Highland Park Airport and Love Field
Dallas, Texas

Dixie Air Associates, Inc.
Municipal Airport
Memphis, Tennessee

Executive Aircraft Company
Municipal Airport
Kansas City, Missouri

Hair Flying Service
Harding Field
Baton Rouge, Louisiana

Howard Aero, Inc.
Service Division
International Airport
San Antonio, Texas

Poelman Aircraft Co.
New Orleans Airport
New Orleans, Louisiana

Ragsdale Flying Service
Municipal Airport
Austin, Texas

Kenneth Starnes Aviation Service
Adams Field; Little Rock, Arkansas

Southwestern Skyways, Inc.
Municipal Airport
Santa Fe, New Mexico
and Ogden, Utah

Sunny South Aircraft Service, Inc.
Broward International Airport
Fort Lauderdale, Florida

Walston Aviation, Inc.
Civic Memorial Airport
East Alton, Illinois

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Municipal Airport
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HERE'S to the top man in business flying — long may he rule! Only by keeping him satisfied do we stay at the top with our Authorized Cessna Service Stations — in aviation as in any business, the one who progresses most is the one who gives his fellow men a little more . . . a little better service — LIKE OUR FAMOUS 1-2-3 CESSNA FLAT-RATE SERVICE!

1 You get an accurately quoted price and time-required quotation based on hundreds of job studies covering virtually all maintenance needs.

2 You get genuine Cessna parts and factory-trained workmanship.

3 You save money and time and we stand behind every job for your fullest satisfaction.

ized and has been specified as standard equipment for the Navy Marine HUS-1 (Sikorsky S-58) and HR2S (Sikorsky S-56). The new instrument is integrated with the Lear autopilot amplifier. It indicates pitch and roll attitudes.

NAVY ORDER FOR $200,000,000 WORTH OF F8U-1 CRUSADER FIGHTERS was received by Chance Vought Aircraft following announcement last month that the supersonic Crusader had established a new speed record of 1,015 mph.

X-RAY INSPECTIONS OF EXECUTIVE TRANSPORTS by Aero Corp. of Atlanta last month included an examination of the Mines Safety Appliances DC-3 from Pittsburgh, with Lew Reinhold as pilot.

NARCO DISTRIBUTION OF THE NEW MARCONI 301 ADF in the United States has been arranged, with Canadian Marconi becoming distributor for Narco equipment. The Marconi 301 is said to provide a degree of ADF performance, sensitivity and selectivity hitherto unattainable, incorporates a suppressed loop to eliminate drag and weighs about 30 lbs. installed.

L. B. SMITH IN MIAMI IS COMPLETING ITS FOURTH CURTISS CW20-T passenger and cargo transport. Three have been delivered, one to Northeast Airlines, one to Aerovias Q of Cuba and one to Lloyd Aero Colombiano in South America. The fourth goes to World-Wide Airways of Montreal. The CW20-T has a 47,650-lb. gross take-off weight, 2,100-hp. P&W R-2800-C engines, secondary firewalls, improved fire detection and extinguishing systems, improved power loss detection devices and escape doors opening from both inside and outside.

U. S. STEEL HAS ORDERED ITS THIRD LEARSTAR, according to V. B. Benfer, Lear Aircraft Engineering Division general manager. Its fuel capacity will be increased from 1,125 gals. to 1,350 gals. for long-range operations.

CONTINENTAL MOTORS HAS A NEW FUEL INJECTION SYSTEM for aircraft engines.

FIFTIETH 4-PL. MOONEY MARK 20 has been delivered by Mooney Aircraft at Kerrville, Texas, and Norman Hoffman, executive vice president and sales manager, says current rate of producing 1 Mark 20 every other day will soon reach one

A new one each month

Executive DC-3s — Now Ready

The famous, proven, all-weather DC-3, "the world's most experienced airplane", is still the all around most practical and efficient large executive aircraft, unsurpassed and unreplaced by later designs. It has unquestioned dependability, with long range, high speed, big capacity, small airport ability, top performance and handling characteristics, for economical maintenance and operating costs lower than those of many smaller planes. It makes the average business trip a matter of two or three comfortable hours of roomy, convenient, undisturbed privacy, free from the annoyances of tight schedules, layovers, transfers, cancellations, and baggage delays. It's the modern way to cover more territory and still have more time to enjoy life at home. Write today for a copy of an interesting history of this ubiquitous airplane, with many fascinating anecdotes about its remarkable, many sided civilian, military, commercial, and private careers.

N50F Deluxe DC-3

Today's fastest and quietest DC-3. Luxurious lounge type interior, with extra large cabin and picture windows. Retractable tail wheel, new lightweight landing gear cover doors, flush loops, many other extras. Choice of Collins or Bendix executive radio. New ship guarantee, with complete disassembly and overhaul, and 800 hour guarantee on your choice of engines.

N51F Special DC-3

Comfortable fourteen place interior, with big windows, choice of Bendix or Collins executive radio. New ship guarantee, with complete disassembly and overhaul, and 800 hour guarantee on your choice of engines.

Also available to your order — automatic pilot, X or C band radar, extra Bendix, Collins, Sperry, A.R.C., Wilcox, radio and electronics, lightweight landing gear cover doors, retractable or faired tail wheel, special cowlings, outer wing tanks, 26900 manual, additional picture windows, choice of engines — Super-92, Pratt & Whitney R1830-75, -92, -94, R2000, Wright R1820-56, -72.

Others to your modifications

LAST OF THE LOW TIME C-47s (1950-6327 hours)

- **now in various stages of disassembly, overhaul, and conversion** at our four conversion centers (St. Louis, Toledo, McBride, Pompano)
- **can be completed with many of your own specifications** — send us a list of your wishes, and we'll give you a price

Call PErshing 1-2260, or write REMMERT-WERNER, Lambert Field, St. Louis, Mo.

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airplane a day. Some 4,000 persons attended open house at the factory celebrating the 50th delivery, which went to Frank Ogden of Toronto, distributor for eastern Canada.

ALABAMA DEPARTMENT OF AERONAUTICS in 21 years since starting its state airport aid project in 1935 has assisted 136 municipal airport projects in 51 localities and 127 privately-owned fields and strips in 95 localities.

FACT-FINDING STUDY OF GENERAL AVIATION FACILITIES REQUIREMENTS has been launched by the management consulting firm of Booz, Allen and Hamilton. The study is for the General Aviation Facilities Planning Group serving under Edward P. Curtis, President Eisenhower's special assistant for aviation facilities planning.

ROYAL CANADIAN AIR FORCE OFFICERS have completed a series of technical and flight evaluation tests of the Temco TT-1, already selected as the U. S. Navy's first primary jet trainer.

BELL X-2 RESEARCH ROCKET PLANE crashed and killed its pilot last month after launching from a mother plane at altitude. The X-2 had recently attained a speed of 1,900 mph. and an altitude of 24 miles.

NATIONAL FLYING FARMERS ASSOCIATION has presented this plaque to C. J. (Jack) Reese, president of Continental Motors Corp., for outstanding contributions to agricultural aviation during 1956. Fred Triplett, NFAA president, bestowed the honor.

REGISTRATION OF MORE THAN 400 PERSONS was expected for the American Helicopter Society's 3rd annual Western Forum in Dallas, Oct. 7-9.

DALLAS AERO SERVICE has been named distributor by Aerojet-General for JATO installation on commercial, executive and business aircraft, according to Eugene Bailey, general manager.

NEW EXPORT MANAGER FOR CESSNA AIRCRAFT COMPANY is M. F. Mellinger, who joined Cessna last November and has been serving as regional sales manager for Latin America since that time. He was formerly assistant export manager for a food products manufacturing concern.

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make the difference!
Aero Corporation offers you the facilities of a *complete* electronics shop staffed by skilled technicians. Every radio and radar installation or maintenance job gets the personalized attention of the management. Here is another reason why more and more executive planes are being brought to Aero Corporation for complete service.
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Electronics
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AERO CORPORATION
ATLANTA AIRPORT • POplar 1-7721 • ATLANTA, GEORGIA
FIRST IN HELICOPTER OVERHAUL

FAIRCHILD JET

(Continued from page 36)

private Lodestar. This comparison to the Lodestar was made by General Clay, chairman of Continental Can, whose company operates corporate aircraft now and knows its transportation needs and problems from considerable experience. The M-185's cruising speed of more than 500 mph. would make possible such point-to-point schedules as these: New York-Chicago, 90 mins.; New York-Miami, 2 hrs. 20 mins.; Chicago-Dallas, 1 hr. 40 mins.; Dallas-Los Angeles, 2 hrs. 40 mins. and Los Angeles-Kansas City, 2 hrs. 50 mins. A private airplane capable of that performance can have a greater impact on corporate flying than the Lodestar and DC-3 have made. General Clay's comment on jet travel for businessmen is significant. He says: "The Fairchild M-185 will enable us to keep abreast of competition in air transportation and that, in turn, will help us keep pace with the rising tempo of competition in business and industry. Corporate-owned aircraft, comprising with few exceptions converted military bombers and transports, are still geared to the speeds of 10 years ago."

The M-185 will be powered by four Fairchild J-83 engines. These jets have not been described. They probably are expected to produce over 2,000 lbs. of thrust each. Other modern jet engines in this category are now becoming available, such as the new small General Electric jet. ★★★

CRUSADER RECORD

(Continued from page 40)

both sides of the course, 8 Askania theodolite cameras recorded the flight, with triangulation of data on each frame of movie film offering a double-check on the speed. NAA timers were Charles S. Logsdon, chief, and Bertrand Rhine and Harry C. Criner.

But the run was not as simple as cameras would seem to make it. The pilot was allowed no more than a 100-meter (about 328 ft.) deviation in altitude — to prevent diving through the course. His turns were limited to a deviation of no more than 1,500 ft. The airplane had to be a standard production Crusader and carry its full complement of 20-mm. cannon plus ballast equal to a full load of ammunition. It also carried a heavy fuel load, for it landed with 1,500 lbs. of fuel remaining. Three observer jet planes were in the air with observers watching from the air.

The speed run was made at an altitude of 40,000 ft. Windsor kept his speed supersonic from the time he passed 32,000 ft. on the climb to altitude until he had completed two runs, the turns being supersonic, too. In all, he flew some 400 miles and his flight, including take-off, climb, speed runs, descent and landing, lasted only 32 mins. On his northern run over the 9.3-mile course, he was clocked at 1,018.553 mph., and on his southern run, he made 1,012.303 mph. The average of the two gave him the record.

It had taken a Chance Vought crew of 18 technicians and leaders to conduct the trial. They worked 11 days preparing for the 32-minute flight. Among some of the interesting facts they produced about the flight were these: The Crusader's J-57 engine, with afterburning, consumed special JP-5 fuel at a rate of 5 quarts a second between the pylons of the course. Although the 15.1-km. course was extremely accurately measured on the ground, the Crusader actually traveled about 67 ft. farther than that distance — because the pilot followed the curvature of the earth to maintain constant altitude at 40,000 ft. rather than a flat, straight line. Pre-cooling of the fuel to near freezing enabled the Crusader to carry 10% more pounds of fuel than if the fueling had been done at normal temperatures.

★ ★ ★

Coming October 20th . . .

The world's finest, quietest, longest-range aircraft. Opening a golden era in air travel. Newest and finest in flying luxury.

Superlative service between

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Both first-class and tourist. Only on Braniff in the United States will you enjoy El Dorado elegance!

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CESSNA MODEL 172

(Continued from page 39)

nose-wheel gear, called "Land-o-matic" by Cessna, simplifies handling on the ground and in the air and gives the 172 much more usefulness than its predecessor Model 170 offered. Very large "para-lift" flaps aid its short-field characteristics.

With the 1957 version of the 172, Cessna has adopted a new policy of pin-pointing its performance data. It formerly used such phrases as "over 120 mph." for cruising speed and "over 500 miles" for range, but now 172 performance is stated in exact figures. These include 135-mph. top speed at sea level and 124-mph. cruising speed using 70% hp. at an altitude of 7,500 ft. It has 42-gal. fuel capacity of which 37.5 gals. are usable and Cessna says this is good for a 519-mile range or 4.2-hr. endurance at a true air speed of 124 mph., or for a 620-mi. range and 6.4-hr. endurance at a 97-mph. true air speed. Rate of climb at gross weight and sea level is pin-pointed at 660 ft.

1957 Cessna Model 172

Factory Data

Engine, Cont'l. 0-300-A, hp.	145
Top Spd., mph.	135
Cr. Spd., 70% hp., 7,500 ft., mph.	124
Range, 124 mph., 4.2 hrs., mi.	519
Range, 97 mph., 6.4 hrs., mi.	620
Fuel Cap., gals.	42
Rate of Climb, fpm.	660
Svc. Clng., ft.	13,300
Gr. Wt., lbs.	2,200
Empty Wt., lbs.	1,260
Useful Ld., lbs.	940
Max. Bag. Compt. Ld., lbs.	120
Span, ft.	36
Length, ft.	25
Height, ft.-ins.	8-6
Wing Area, sq. ft.	175
Wing Ldng., lbs. sq. ft.	12.6
Pow. Ldng., lbs. hp.	15.2

NOTE: All performance for gross weight and sea level unless noted.

The Biggest shaft in Texas . . .
The San Jacinto Monument, the tallest shaft in Texas; in fact in the United States . . . your landmark just 30 miles east of ANDRAU AIRPARK.
The Biggest welcome in Texas
The biggest Texas welcome is at the biggest privately owner commercial airport in Texas. Set down at Andrau Airpark for comfort, convenience and real Texas-style hospitality.
CITY OF HOUSTON
• Expanded Cafeteria facilities
• 80-90-100 octane gasoline
• 2 lighted runways—4714'
• Low Freq. Homing Beacon 269 kc AAP
• 15 miles Due West of Houston
• 24 hour operation
• Transportation to Houston and Shamrock Hotel
Bob
owner-manager
Avis Rent Cars On Field
Andrau Airpark
ALIEF, TEXAS

ANTI-COLLISION RADAR

(Continued from page 27)

proaching aircraft's range, radial velocity and acceleration.

Other basic problems must also be resolved by a thorough study of the escape maneuver on the digital computer.

This escape maneuver has been specified by the Air Transportation Association —, it will be a 1-G lateral turn away from the intruding aircraft. This will be either a left or right turn with a maximum bank angle of 45 degrees, the airplane being rolled into this bank angle and the angle of attack suitably increased. One second is allowed for pilot reaction time after the alarm is given and two seconds are allowed to roll the airplane and develop the lateral acceleration. Preliminary studies indicate that warning times in excess of 15 seconds will be required, meaning that detection and measurements by the radar must begin at a range somewhere between 24,000 and 30,000 feet, or between 4-6 miles, if closure rates of 1,600 ft. per second are to be reconciled (head-on approach by two aircraft each traveling at 800 ft. per second).

Whereas the first phase PWI proximity warning indicator system will detect and locate an intruder aircraft, the advanced CDA collision avoidance system has as its prime function the determination of whether or not an approaching aircraft represents a hazard to safety and, if so, to alarm the pilot with instructions as to the proper escape maneuver to execute. Emphasis is on the function of "determining the hazard" — the equipment must not only detect an intruding aircraft but must compute the collision possibilities which thereafter develop with changing factors involv-

Lawrence D. Bell

ing radial velocities and accelerations. Simultaneously it must instruct the pilot to make the necessary escape turn. ★ ★ ★

JUST AMONG OURSELVES

(Continued from page 15)

Corporation. Forty-five of Larry Bell's sixty-two years have been spent in aviation, so most everybody will agree it's about time the dean of the country's aviation executives should slow down and go fishing.

Larry Bell is one of the few surviving pioneers who laid the cornerstone of U. S. aviation back in the pre-World War I days. He started out as a mechanic for two exhibition pilots, his brother, Grover Bell, and Lincoln Beachy in 1912. In 1913 he went to work for Glenn L. Martin and the next year, as superintendent, hired Donald W. Douglas, a young engineering graduate of M. I. T.

In 1917 Don Douglas returned to the Army and the Martin firm was merged with the Wright interests. Bell was vice president and general manager of this Cleveland outfit until he went to Buffalo in 1928 to join Reuben Fleet at Consolidated Aircraft Corporation. When Fleet moved his company to San Diego in 1935, Bell formed his own company which was destined to become one of the most important and successful aircraft research, development and manufacturing concerns in the free world.

In recent years Larry Bell has been honored at home and abroad with medals, degrees, trophies, citations and coveted awards too numerous to mention. In 1948, together with Chuck Yeager and NACA Researcher John Stack, Bell received the Collier Trophy in recognition of the design, development and manufacture of the Bell X-1, the first supersonic aircraft. But it was in the field of human relations that Larry Bell's most meaningful award originated — an award for his program of hiring physically handicapped persons! Though he rose to heights in industry and national acclaim few men ever reach, Larry Bell never lost that rare quality of humility that truly great men always seem to possess. The entire aviation industry, where his friends are legion, join with the thousands who have worked with him and for him, in wishing him the best of everything during the coming years of rest and relaxation he so eminently deserves.

Plenty Planes, No Manpower

WHILE everyone, and rightfully so, seems to be concerned about the Russian educational system that's grinding out scientists and engineers at a faster rate than all the free nations put together, a manpower shortage of good pilots and mechanics is developing right here in our own country and no one seems to

Royal
AMPHIBIAN NEWS

Notes on America's outstanding utility amphibian for business flying and charter service operation

FLY ANYWHERE . . . LAND ANYWHERE . . .
WITH THE VERSATILE ROYAL GULL

Go wherever you like in a Royal Gull . . . to hundreds of places where other planes can't take you . . . range up to a thousand miles. Put it down on land or water. Just one flight will convince you that its executive comfort, easy handling, responsiveness, and outstanding engine performance are incomparable. Arrange for a demonstration flight now!

If you'd like to know how the Royal Gull fits into your air-transport picture, write direct —

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AIRCRAFT CORPORATION
6787 West National Avenue
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A subsidiary of Kearney & Trecker Corp.

be too concerned about it.

With all the new excellent airplanes in production and on the drawing boards it's apparent that we're approaching the time in commercial aviation when manpower shortages might possibly become a limiting factor in the sale and utilization of commercial aircraft. We recently talked to an executive of a small and growing airline who oftentimes has to take flights out himself because of the pilot shortage. Fixed-base operators have been scraping the bottom of the barrel during the past several years for A & E mechanics. The industry recognizes the problem but no one seems to come up with the solution.

It seems to us the commercial aviation industry is sitting around waiting for the problem to solve itself.

FOUR-ENGINE CESSNA

(Continued from page 38)

and elaborate instrumentation. His landing was just as short and the airplane was almost three-pointed. Between fly-by demonstrations, the 620 was parked at the Yingling Aircraft hangar for public inspection. Westfall would not give details of the airplane's performance but said it has demonstrated excellent stall characteristics and has performed well with 1 and 2 engines out, including 2 engines out on the same wing. It has a 1-engine-out service ceiling of 20,000 ft.

Harmon pointed out that a new horizontally-opposed, 6-cylinder engine developed by Continental for the 620 is so efficient that four of the GSO-526A engines and their constant-speed, full-feathering Hartzell propellers weigh less than two radial engines with propellers which would offer the same performance for the 620. At the same, the new Continentals provide the multiple-failure safety advantages of four-engine operation over two-engine operation. "This gives the 620 truly global capabilities with airline dependability," Harmon said.

Cabin pressurization provides a cabin altitude of 8,000 ft. while the airplane is at 18,000 ft. and modern, airline-type thermostatic-controlled heating and air conditioning are furnished by the 55-hp. AiResearch gas turbine, located aft of the cabin. This power plant also drives a 50-amp generator, four other 50-amp generators being installed on the main engines, one each. Thus the 620 has been made completely independent of ground electrical services on the airport ramp. Normal procedure is to start the turbine first, using the ship's nickel-cadmium battery. The turbine can operate for long periods to power the ship's ground blowers for cabin ventilation, heating or air conditioning. Its generator furnishes the energy for starting the main engines.

Although no mention was made of the airplane's military possibilities, Cessna obviously has military sales under active consideration, for the 620 is an "off-the-shelf" airplane completely developed with private funds and offered first to commercial purchasers. It offers considerable possibilities for staff transport, navigation training and 4-engine transition training and a military order would not be a surprise at this stage. The only question is which will come first, commercial or military orders.

As a business transport, it will find its market in the DC-3 corporate aircraft category and probably will be ordered first by corporations already equipped with business air fleets. For these operators, the need for modern equipment and cabin pressurization has been growing in intensity and the $375,000 price is highly competitive to current costs for top-notch DC-3 conversions with full equipment.

In this regard, Cessna is apparently basing its price on the normal cost increases indicated by the time element involved in starting production, having it rolling in early 1958 and making deliveries later in 1958. However, Cessna has emphasized that the 620 price will not be firmed until next March. Standard equipment will not include radio and electronics or de-icing installations. These, plus radar, optional reverse-pitch propellers, optional anti-skid brakes, custom cabin variations and the usual individual preferences in equipment, probably will boost the cost of a fully-equipped 620 to $450,000 and more. Even so, it now costs twice that amount to match the 620's speed and cabin pressurization with a new-production twin-engine transport.

Commercial market possibilities, plus military needs, could very well justify a production rate of 100 Model 620's a year and it is believed

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Remmert-Werner of Florida, Inc., will furnish transportation to Miami for the Annual Forum and Convention of the National Business Aircraft Association. We will be glad to assist with room reservations, transportation, recreation, or any other vacation arrangements you wish.

ON the Airport

Swimming pool
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Hillsboro Light House
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Deep sea fishing, sail, king, marlin, etc.
Business districts of Pompano Beach and Fort Lauderdale (12 minutes)
Ocean Beaches

Complete Facilities for
DC-3
Lodestar
D18S

Four 4000'x150' hard surface runways
122.8 Unicom—Night Lighting
Customs Services available, Nassau clearances and survival kits

*Hangar, all steel and masonry, large enough for Convair, with four side access, now under construction
50 mechanics

***All services now available from special mobile shops**

Cessna's planning is based on such a scale. The firm has already committed itself to a $10,000,000 expansion of production facilities in view of this and other projects, including increasing orders for jet trainers.

CESSNA 620 EQUIPMENT

(Continued from page 25)

tiples for standby are provided; 275 lbs. for electronics included in empty weight. Provisions on elevator, rudder and aileron primary controls are made for autopilot servo installations, with provisions on aileron, elevator and rudder tabs for autopilot trim servo installations. Following equipment will be available for first deliveries: Collins Integrated Flight System consisting of Approach Horizon, Approach Indicator, Steering Computer and Vertical Gyro, with supporting components including Radar Transponder, Flux Valve Compass, Collins Autopilot, dual navigation equipment, 180-channel transceiver, 90-channel standby transmitter, dual glide path receiver, marker beacon and dual radio compasses.

HYDRAULICS: Two 3,000-psi., continuous operating, variable-volume, pumps, with auxiliary hand pump to raise and lower gear. Hydraulic fluid capacity, 3.08 gals.

BRAKES: Power-boosted with manual override, hydraulic Goodyear single-disc, emergency bottled air brake system incorporated. Non-skid brakes optional.

VACUUM PUMPS: Two, one on No. 2 engine, one on No. 4 engine.

DE-ICING, ANTI-ICING: Inflatable, high-pressure pneumatic rubber boots on wing and tail; propeller and windshield anti-icing; 8.5-gal. anti-ice fluid capacity.

WINDSHIELD WIPERS: Two hydraulically-operated, selective speed.

FUEL TANK ARRANGEMENT: All fuel located outboard of inboard engines and between spars and in tip tanks. Tanks are bladder-type cells. Tanks are grouped to provide essentially four tanks, one feeding each engine individually. Transfer system between tanks permits use of all fuel on board. Total capacity, 535 gals.

FIREWALL SHUTOFF VALVES: Cut-offs at the firewall for fuel, hydraulic and anti-ice fluid, with manual fuel shut-offs for storage of aircraft.

FIRE DETECTION AND EXTINGUISHING: Continuous fire detectors installed on all four main engines and gas turbine. Two bottles, each 386-cu. in., located in right wing fillet area, provided for two-shot high-rate-discharge system.

CARBURETOR HEAT: Temperature indicators for all carburetors; manually-controlled heat.

TRIM TABS: Installed on ailerons, elevator and rudder.

NOSE WHEEL STEERING: Optional, hydraulically-operated and controlled from rudder pedals with on-off switch on control column.

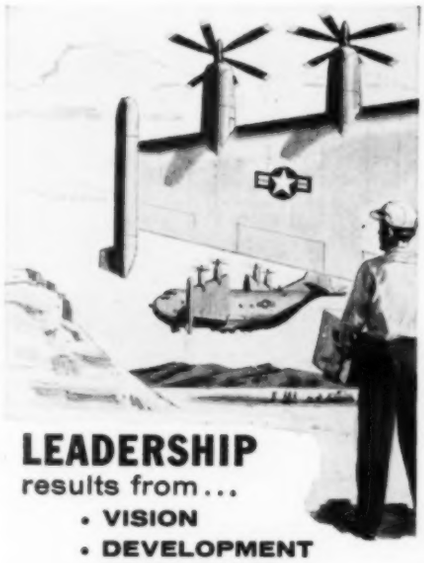
CABIN: Inside dimensions are 6 ft. ceiling, 13-ft. 3-in. length and 5-ft. 8-in. width, rectangular floor plan with straight and parallel sides for wide variety of furniture arrangement. Six large windows, 3 on each side. Seat tracks run length of cabin for positioning of seats or tie-down rings for any spacing, using 1-in. increments. Five reclining sleeper seats and one folding table are standard but other custom furniture available. Door partition separating main cabin from aft rest room and baggage is removable. Seats and surrounding structure are constructed to withstand 10G acceleration. Cabin door at rear of cabin contains integral steps and is hinged at bottom.

BAGGAGE COMPARTMENT: Full-size, walk-in compartment in pressurized cabin, containing 50 cu. ft. of space with 500-lb. max. capacity. Compartment adjoins lavatory aft of cabin and contains clothing and hat racks.

LAVATORY: Full-size lavatory compartment aft of cabin contains toilet and wash basin.

BUFFET: Space allocated just aft of co-pilot for a buffet.

OXYGEN: Crew oxygen system is standard equipment. Passenger oxygen system will be optional.



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Complete Sales — Custom Engineering

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No job too large or too small. Big or small, you get the same superior Faulkner engineering and maintenance. Just one look at Faulkner's modern equipment and up to date plant will convince you that complete avionics are best by FAR.

* Faulkner Air Radio
INTERNATIONAL AIRPORT HOUSTON, TEX.

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It's Westward Ho! for CENTRAL

One day in November of 1956, CENTRALINERS will, for the first time, begin winging westward into Colorado. And this new CENTRAL AIRLINES route will provide service for five new cities: Denver, Colorado Springs and Lamar, Colorado; Guymon, Oklahoma, and Liberal, Kansas.

Now, as when it was established more than 12,000,000 air miles ago, CENTRAL is proud of the special job it is privileged to do in our splendid industry: to speedily transport on responsible schedule, travelers, in the areas served by CENTRAL, and to terminals of most convenient connections with coast-to-coast airlines.

Now Serving Prominent Military Installations in Texas, Oklahoma, Arkansas, Kansas and Missouri.

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GENERAL OFFICES
Meacham Field • Fort Worth, Texas

ANOTHER IN A LONG SERIES OF FOREIGN FLIGHT DELIVERIES OF AERO COMMANDERS was made last month when this 560A was ferried from the Aero Design factory in Oklahoma City to Paris. It was purchased by Comptoir de l'Industrie Cotonniere of France, whose pilot, Jean Moulignie, and radio operator-navigator, Jacques Pitoiset, are shown with it above. The sale was made by Aero Design's French distributor, Babb Sarl of Paris.
(Aero Design Photo by Wayne Entriken.)

LIGHT TWIN RADAR

(Continued from page 33)

grees (about the same, incidentally, as the beamwidth of the 5400-megacycle equipment utilizing a 22-inch dish used in the DC-6/7). This beamwidth, together with the high output power of 40 kw, will easily allow detection of weather out to the extreme (50-mile) range.

Notwithstanding its light weight and small size, the AVQ-50 was designed to provide the reliability and performance demanded by airline-type operations. ARINC approved tubes are used throughout where applicable, and all other electrical and mechanical components were carefully selected for long life and trouble-free operation. The receiver-transmitter and accessory unit are both packaged to comply with the latest ARINC standards, and the entire system will readily lend itself to airlines maintenance and inspection procedures. The equipment meets all the requirements for, and is designed to bear, a CAA TSO.

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NOW! REVERSIBLE PROPELLERS

- Constant Speed, Feathering, REVERSING
- Simple Construction, SAFE, Low Cost
- For emergency braking in small fields or when runways are slippery
- For handling of flying boats on water

Hartzell **PROPELLER, INC.**
Piqua, Ohio, U.S.A.

HARTZELL

FIRST FACTORY CERTIFIED SERVICE CENTER FOR PIPER AIRPLANES is Executive Airmotive at Stewart Air Park, Parkersburg, West Virginia, Piper distributor for West Virginia, Southern Ohio and Western Maryland. Wes Holmes of Piper (second from left) is shown presenting a Piper plaque of approval to Bun DeWeese, Executive Airmotive manager, with Robert Gift of Piper (left) and J. Wayde Stewart (right), owner of Stewart Air Park, smiling their approval. Piper Certified Service Centers are approved only after factory training of personnel and inspection of facilities and equipment. These service centers are being designated across the nation for improved service to Piper owners.

First public showing of the AVQ-50 is planned at the National Business Aircraft Association's meeting in Miami on October 23, 24, and 25. A firm price has not been announced; deliveries begin early in 1957.

There are five RCA custom aviation equipment dealers serving business flying with complete RCA-approved facilities. They are:

Associated Radio Service Co., 3508 Love Field Drive, Dallas.

AiResearch Aviation Service Corp., Los Angeles International Airport, Los Angeles.

Airborne Electronics, 155 First Street, Mineola, New York.

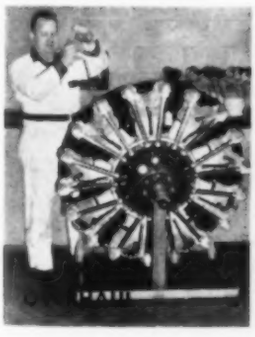
Chamberlain Aviation, Municipal Airport, Akron, Ohio.

Reading Aviation Service, Reading Municipal Airport, Reading, Pennsylvania.

★ ★ ★

BUSINESS PLANE SERVICE

Whatever your requirement—
You'll find it at Ohio Aviation.



Keeping a plane in service is something like maintaining your health—It occasionally requires the services of a specialist. Here at Ohio Aviation services such as conversion, radio installation, instrumentation, engine overhaul, upholstering and refinishing are being given to a large number of corporation owned aircraft. A large stock of spare parts results in quick service that cuts down the loss in flying time. Many corporations have selected Ohio Aviation to keep their planes in top operating condition on a year—round basis. Why not join the list of large corporations who use Ohio Aviation service consistently. See us on your next service requirement. Call Vandalia 4-4646.

THE OHIO AVIATION CO.
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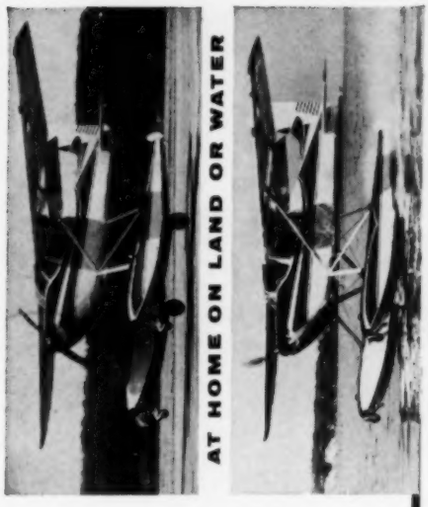

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CESSNA 180 ON Edo FLOATS

Your Cessna 180 on Edo amphibious floats gives you great new utility you never dreamed possible before. Suddenly, you have a million landing places—every lake, harbor, river, plus regular airports.

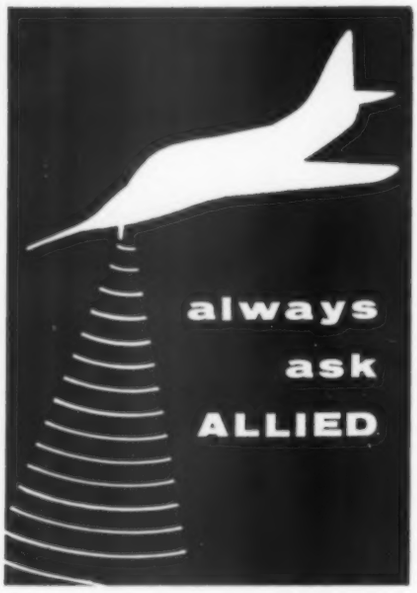
And you get such wonderful performance with the Edo 180 . . . over 135 mph cruise, fast take-off from water, the nicest handling characteristics on land. At last a really nimble amphibian!

Investigate how Edo amphibious floats will improve the usefulness of your Cessna 180. They're easy to install, easy to remove during seasons when water operations may not be desired. Available for prompt delivery. See your Cessna distributor or write for float brochure.

Standard Edo floats available for all single engine Pipers, Cessnas and many other types.

Edo Model 289 amphibious floats feature retractable, wide-tread, four-wheel gear each with long-travel oleo struts. Surprisingly little weight penalty.

EDO CORPORATION • College Point, L.I., N.Y. *Fine Floats since 1925*



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ALLIED LABORATORIES in Houston, authorized factory-direct dealers for the great names in aircraft radio, now offers convenient credit terms for purchase of **Wilcox, ARC** or **Narco** radio equipment. Three-, six-, or twelve-month schedules can be arranged on ultramodern lightweight systems such as the Wilcox "CANARI" and Radar Transponders, and ARC 15 Omni, CD-1 Course Director, and Type 21 Lightweight ADF's.

HIGHEST TRADE-IN ALLOWANCES! Your present equipment is **worth more** when traded in at ALLIED LABORATORIES. ALLIED needs ARN-7 and MN-62 ADF equipment **now,** and will make you the best possible deal on your old set. ALLIED sells, installs, and services your new radio under factory guarantees. ALWAYS ASK ALLIED before you trade or buy . . . for ten years a leader in instruments and radio sales and service!

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Telephone Mission 5-1796

AVIATION MERCHANDISING

(Continued from page 45)

and put forth no effort whatever to sell that product, or might confine his sales efforts to that of a competitor's. Since service plays a very important part in the selling of accessory equipment, especially that of radio and electronic equipment, a customer may, himself, seek an outlet in a distant area on the basis of a reputation that such a distant distributor may have built up, representing his service and his interest in the customer.

Those who are concerned with sales policies, however, are cognizant of the weaknesses in this particular situation, for there enters into the picture another factor which is very important to a sound merchandising policy. That is, without territorial confinement, there is a temptation on the part of some unscrupulous distributors and dealers to offer reductions in prices, especially if the potential customer is a foreigner to his territory and without a price reduction incentive, would purchase his needs closer to his home base. There are still a great many potential customers who have found it profitable to shop for discounts from one end of the country to the other.

NEW $452,000 TERMINAL BUILDING for New Castle County Airport at Wilmington, Delaware, opened recently, centers civil aviation there on du Pont Boulevard. Designed for expansion, new terminal has airline counters, dining room, coffee shop, cocktail lounge, lobby and rental space on main floor; weather bureau, airport manager, observation deck and rental area on second floor; and CAA offices, equipment and control tower on third, fourth and fifth floors. G. Edwin Petro is airport manager.

While the maintenance of a price structure is primarily the responsibility of the manufacturer, violations are hard to police, and the manufacturer

outperform them all with a
McCauley Met-L-Matic Propeller

Shorter Take-off

More Rapid Climb

Faster, Smoother Cruise

The McCauley Constant Speed Met-L-Matic translates engine power into better flying performance. You owe it to yourself to specify the best propeller —McCauley.

Met-L-Matic is shown on Cessna 182.

AIRLINE MET-L-MATIC FORGED STRENGTH McCAULEY

McCAULEY INDUSTRIAL CORPORATION
1840 HOWELL AVE.
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"World's largest manufacturer of metal propellers for personal and business aircraft."

CLEAN-UP OF AIRPORT LANDSCAPES for better public relations has resulted from obliteration of 12 old aircraft wrecks in Idaho by the Ada County Aerial Sheriffs with assistance of the Idaho State Department of Aeronautics. Pictures show volunteers stripping, burning and burying remains of an old Fairchild 24 at Cold Meadows, ending an eye-sore which has discouraged countless newcomers.

can do little unless he has the full cooperation and assistance of a closely knit merchandising organization. The manufacturer should, therefore, be always concerned with the ethics of his outlets and of the industry itself. A trend to price cutting on aircraft naturally is reflected by price cutting in the accessory market, and vice versa. The manufacturer of aircraft cannot maintain the price of his finished product if the sales outlet permits a discount on the accessory equipment. Free installation of accessory equipment is but another means of cutting prices on the accessories and the aircraft. Straight discounts below the established or suggested price, long trade-ins on either used aircraft or used accessory equipment, free or reduced cost for installations, are all unethical practices that tend to destroy price structures, and eventually to impoverish the sales outlet.

CONVERSION #106

HOW TO BRING YOUR *DC-3 up-to-date*

Conversion Number 106 is a DC-3 brought up to date for a new and now satisfied customer. Executive Aircraft Service, Inc. concentrated on installation of radar electronic equipment, a new electrical system, A-12 Autopilot, new instrumentation and overhead panels, radio, PAA main gear wheel doors and an EAS Rudder Servo. The interior also was reupholstered. The ship now is relicensed for 26,900 lbs. and 1350 H.P. take-off. Result, a new customer is satisfied. Satisfied customers are our best recommendation.

L. V. EMERY
President

EXECUTIVE AIRCRAFT SERVICE, Inc.

P. O. BOX 7307 — DALLAS, TEXAS (Garland Airport) FAirdale 2675

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For executive and corporate aircraft ...the NEW

SCOTTORAMIC FACE MASK

Unlimited Visibility! Complete Smoke and Fume Protection!

Smart corporate and executive aircraft pilots are taking a tip from the commercial airlines by equipping with the Scottoramic. It gives pilots that vital side vision so necessary for safe, smooth landings. It also protects from smoke, fumes and CO_2. You're prepared for any breathing hazard when you choose the face mask with Vision Unlimited.

Write today for further information.

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235 Erie Street, Lancaster, N. Y.
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Is your Jet Engine RPM Measurement Accurate???

The NEW B&H Instrument

TAKCAL

• • • Reads Jet Engine Speed to Guaranteed Accuracy of 10 RPM in 10,000 RPM (±0.1%)

Checks Tachometer System

Adapts to any Frequency Problem

The inter-relation of RPM to efficiency and thrust in jet engines is fundamental. Proper adjustments for maximum thrust, engine life and safety of operation can be made only upon accuracy of instrumentation.

The new B&H TAKCAL incorporates a refinement of the frequency meter principle. It operates in the low (0 to 1000 cps) range, reading the frequency of the tachometer generator on a scale calibrated in percent RPM corresponding to the engine's RPM. In addition, the TAKCAL checks the tach system. The TAKCAL circuit and tachometer are parallel so that readings can be made simultaneously to determine the accuracy (or inaccuracy) of the aircraft's tach system. The TAKCAL operates during the engine run to properly set up engine controls for maximum economy and safety.

The TAKCAL's component parts are identical with those used in the J-Model JETCAL Analyzer. They are here assembled as a separate unit tester and for use with all earlier models of the JETCAL Tester.

The TAKCAL operates accurately in all ambient temperatures from −40°F. to 140°F. Low in cost for an instrument of such extreme accuracy, it is adaptable to application in many other fields.

Explosion-proof TAKCAL for special applications. Measures 200 to 7500 RPM, direct reading, with ±0.1% accuracy.

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B & H INSTRUMENT CO., INC.
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These are dangerous practices and the selling organization cannot expect to continue in business by giving away its legitimate profits and its reserves for service. During the period of such practices their assets are dissipated. Legitimate and ethical operators are placed at a distinctly unprofitable disadvantage competitively. It can be said that any trend toward unethical sales practices has a detrimental and destructive effect on the economy of the whole industry. Despite the far-reaching effects on the industry, these practices are the hardest to eradicate. This situation is further complicated by the legal restrictions placed upon the manufacturer to control his prices and discourage price cutting. There is a conflict of legal authority as to how far a manufacturer may go to police his outlets. However, without respect to the legal status of governmental and legal controls, this is a problem that must be met within the industry itself.

Despite these aggravating and difficult situations, the major need that faces the aircraft industry is to do a selling job. The personnel of the various distributor and dealer organizations in the industry have to a great extent been recruited from among those whose experience in sales has been very limited. Their background usually has been in the mechanical and technical phases of aviation, rather than in selling. While there is a large number of sales people connected with the industry at this time, if the industry itself is to move out in a manner comparable to, say the automotive industry, it is going to require a considerable amount of sales training at the distributor and dealer levels.

Several of the larger aircraft manufacturing companies have set up programs of sales assistance and training for their distributor and dealer sales people that are beginning to show surprising results. The sales of these companies have increased far beyond the expectations of those who fostered the original plan. This approach to merchandising may well be emulated by all other manufacturers in the industry, and should be encouraged by those organizations which represent the various segments of the industry, particularly those of operators, distributors and dealers. One of the leading accessory manufacturers in the industry has recently announced a similar type of sales training program. While in some instances, this will parallel that of the aircraft manufacturers, the program will reach a much larger number of outlets. This will mean that more distributors and their sales personnel

will be given a complete course of training not only in sales approach, but in basic fundamentals. This program will be reflected in the whole industry, for with fully trained sales personnel in the field, all of the products that they represent will profit saleswise from such training.

These programs, in both instances, include sales manuals covering basic fundamentals of selling, advertising and promotion, planning, how to evaluate a potential market, how to discover prospects, how to reach those prospects, how to demonstrate products, and how to close sales. The distributors are shown how to set up dealer organization at three levels: sales representatives, who are referred to as bird-dogs; non-stocking dealers and stocking dealers. The distributor, in all cases, provides installation and service facilities.

A good plan of merchandising provides that each distributor must have a dealer organization and channel sales through it. The distributor should be supplied sales promotional literature, advice and suggestions as to how to increase sales, by the manufacturer. The manner in which this type program has been accepted in the industry is proof of its worth. As the industry is capable of absorbing a highly accelerated program of sales promotion, additional services should be made available saleswise and servicewise to this distributor organization. A sales promotion campaign must be augmented by the purchase of a large amount of space advertising in aviation periodicals, by direct mail to all aircraft owners, dealers and operators, and by sales contests as incentives to both distributors and their personnel.

It must be remembered that although a factory can develop a product, plan production, establish prices, set up procedures for writing orders, hire people to build, test, pack and ship products, nothing can be done to insure a profit until a demand has been created for the product, until orders have been received. Somebody must sell something to someone. ★ ★ ★

NATIONAL AIR SHOW

(Continued from page 31)

far out on the concrete apron in front of the building. Everywhere there was action.

The moment I set foot on the gangway leading up to the cockpit of a training plane, the pilot's canopy raised automatically and invited me in. In the center of the apron a gleaming new fighter plane revolved slowly on a turntable. Nearby, at brief intervals uniformed members of all the air arms

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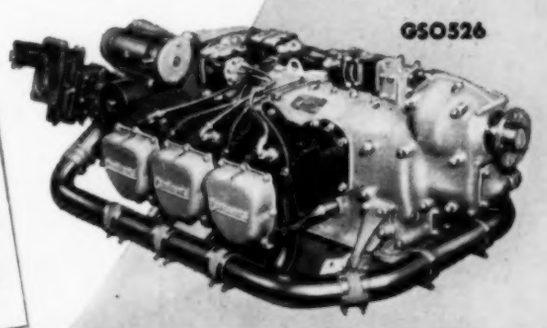

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were demonstrating an airplane ejection seat. It exploded upward and then slipped easily down a near-vertical track. Oklahoma Indians in ceremonial dress added a touch of color to a fascinated crowd.

Inside the Navy hangar there was a big model of the USS Shangri-la. It really shook me. But it was not the Navy I knew when I was a seaman-gunpointer on the USS Columbia during World War I. To clear the deck for action on the Cruiser Columbia we first had to stow our reserve coal supply. On the Shangri-la, I was told, the Old Man pushes a button and his flyboys are in the sky. The model of the great aircraft carrier was symbolic of the new airminded Navy. This was demonstrated every day of the show.

On the flyway, a mile or more from the hangars, every day of the show each of the major establishments of the Armed Forces filled a blue sky with the story of its mission. Each demonstration was something to quicken the pulse and stir the imagination.

The Navy, in command of Admiral Arleigh A. Burke, opened the flight program with a stream of airplanes called Demons, Crusaders and Warriors. They appeared to be shot out of a giant catapult at split-second intervals. There were trackers, patrollers and 'copters. They were getting there "firstest with the mostest."

Most impressive to me, in the Navy Show, was the daily shuttle of planes from the Shangri-la. I could easily visualize the big carrier as it cruised off the California coast. I could see the Old Man press the flight button I could see his planes flying overhead over the center of the United States fifteen hundred miles from his ship.

While they were turning back toward the carrier one day a Navy press officer offered me a field telephone, saying:

"The Captain of the Shangri-la is on the line. Do you want to talk to him?"

I said, "No thank you", and passed the 'phone to the Associated Press correspondent. But did I want to talk with the skipper of the carrier? Sure! I would like to meet him some day. But, hear this:

At the time I was offered the 'phone I had just calculated that the carrier planes were flying from the Pacific Ocean half way across the continent to Oklahoma City in about the same length of time it used to take the Cruiser Columbia to pass under the Brooklyn Bridge.

That choked me up. Besides the display of air power over the field was just starting.

Gen. Curtis LeMay looked at his watch and bit the end off a fresh cigar. It cracked like a signal. Instantly big jet-powered bombers began descending from the stratosphere. The Air Force Show was underway.

The powerful bombers came nonstop from distant outposts of LeMay's Strategic Air Command. They came from Burmuda, from England, across the Atlantic from Africa—5,000 miles away.

Had the bombers been unfriendly they might have scorched the beautiful prairie states from the Gulf to Canada, and left not even a ground squirrel to see the sunset.

Behind the bombers came a long parade of support planes. There were tankers, boxcars and troopers. The whole Air Force appeared to be on the move. Sabre and Starfire fighters circled to cover the long caravan. Final-

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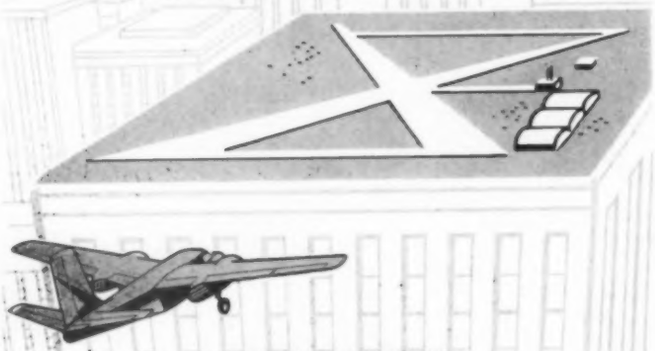

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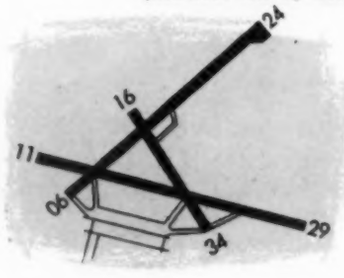

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Familiar smiles at National Air Shows for many years are flashed by the writer, Jim Piersol, who covered his first one 37 years ago, and Bennett Griffin, Washington National Airport manager.

ly, they throttled back and passed close to the audience in majestic review.

Suddenly a big pile of dynamite exploded in a mushroom cloud of dust and smoke. Then the Army was on the move, in a manner I had never seen before. It was a new Army simulating an airborne maneuver intended to establish an airplane landing strip in an imaginary jungle, almost at the feet of the audience. Colonel W. R. Tuck was in command.

Troops were landed in helicopters. They poured out the doors like there was a fire inside. They were armed with carbines, grenades and sidearms, and they carried big packs on their backs. Yet they ran like a track team and took up positions around what was to be the border of the 1,000 foot strip.

Machine guns were mounted at strategic points to defend other soldiers already landing to clear away impediments to approaching planes. Big tools and weapons drifted down from utility planes, dangling on the shroud lines of different colored parachutes. Each color identified the tonnage coming down. It contained scrapers, jeeps and artillery; and, of course, there were bacon and beans.

Explosions simulated enemy rockets and projectiles falling everywhere. Men fell here and there to make the battle real. Helicopters kept dropping down with replacements for the wounded they gently lifted away.

Finally, in a matter of minutes, the landing strip was clear and secure.

Then I stepped into a helicopter and flew over to the Firestone Press Club. There, with Ed Burks, former political editor of the Tulsa World, and Major

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Joe Lynch, Pentagon press officer, I sat down to rest.

"Good show," I volunteered. "Perhaps we ought to say a prayer of thanks."

"That reminds me," Joe replied.

He took a paper from his pocket. On it was written the home telephone numbers of defense officers in Washington whom he had been ordered to call, in case there were casualties. Joe tore the paper to pieces and smiled as they fluttered into a wastebasket.

Thus, the show ended behind the stage. ★ ★ ★

Questions and Answers for Airport Operators

THE DESTINY OF SMALL-TOWN AIRFIELDS

IN the course of the last fifteen years we have had occasion more than once to worry about the fate of public airports owned, acquired or built to serve small towns. Some, after several years without a single based aircraft, have seemed to have no excuse for existing.

Usually such fields suffer from want of services either on-field or available from someone in the community served. The prime lack has been some means of communication between the field itself and the community or communities which it served, or rather, was built to serve. Without such means of communication, no way existed for the transient pilot visiting the community to get ground transportation into the town to complete his journey. As frequently stated here the essential need for that purpose has always been a telephone.

However, in the last ten years of active development and acquisition of airports by towns of all sizes, we have had one thing forcibly imposed on our thinking. That is the firm conviction that few airports have been built during that time which did not have a definitely useful purpose. Some may have had only a minimum of usage for a period of months or years, frequently due to a lack of facilities other than landing strips and runways or due to loss of interest by the owning agency for various reasons.

No small-town field is hopeless. Once built, some fields may take a considerable time to develop their potentials. If any fault may be implied it must be either that the airport was built too soon or its use was discouraged by lack of public understanding.

About nine years ago a county in Texas built a field near the county seat. There were several airplanes in the county at that time. This was a pretty ambitious project and included pavement. Yet the field never had a substantial amount of usage. One of

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the things lacking was any sort of hangar for storage. One or two of our aviation-minded friends tried for several years to get enough interest aroused to get the county to erect a small hangar. Long after they ceased their efforts a hangar was built and immediately some based aircraft began to appear on the field and ultimately an operator settled there.

In another part of the same state a turf strip was built by a town and for years lay idle. There had been a succession of public officials subsequent to the group which had sponsored the construction and perhaps their interest or understanding of the usefulness of the field was not great enough to warrant pushing the airport to the forefront in the town's civic development. It looked to us for a time that there would never be any use for the field except for an occasional visiting aircraft. Yet as of this writing there are three aircraft based there. Where did they come from and why? With the very meagre encouragement of scant accommodations it can only be conjectured that air transportation sold itself in a field of adversity.

Three aircraft are not a lot but in their existence is evidence of the usefulness of that airport not only to the owners and those whose eyes are turned toward the air as a transportation medium but also to the taxpayer and the town officials who now have an excuse for spending some money on maintenance and, in time, some improvements. We long since learned the danger, too, of measuring the activity of an airport by the number of based aircraft. Back on the east coast in the resort area of the Carolinas last year we discovered that an airport with less than ten based aircraft had an annual transient volume of better than ten thousand movements. The odd part about that type of volume is that it goes unnoticed very often by the townspeople with resulting failure on their part to recognize the value of an airport.

On the whole, instances of the sort described are not uncommon and are more than encouraging to those who had doubts regarding some of the airports built or acquired to serve small towns. If they can become active to some degree with only the barest of accommodations, it is altogether possible they might have begun to see some use earlier if some facilities and services had been made available at an earlier date. Certainly as they come into use, growth in use will be fostered by such things as telephones, T-hangars and toilets, the three T's of transportation by air for small towns.

As the growth of executive and corporate use of aircraft continues, it is becoming increasingly evident even small fields provide better service if they have a paved runway. Please don't misunderstand the meaning of corporate and executive aircraft. The term doesn't apply only to the big company and the tycoon. Fifteen years ago we knew pretty well a necktie salesman who hit the small towns of Kansas and Missouri in a two place airplane. That was business use and the pilot-salesman was certainly operating within the meaning of the term corporate and executive use. His aircraft was nowhere nearly as expensive as the Spartan Executive based at our field and used by the president of a cosmetics firm, but its purpose was the same.

The most puzzling thing about the small town airport picture has always been presented by the community which would spend considerable money for land and for landing field improvements such as grading and turfing or paving, or the community which would take on a fairly large surplus airport with its considerable responsibility for maintenance and still be reluctant to add those things which would make such fields more attractive to users.

In the final analysis probably the blame lies in the silence of those who would or did want to use such fields but would not raise a voice to protest neglect of the service needs.

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FRED N. STONES, JR., Business Manager

Sworn to and subscribed before me this 25th day of September, 1956.

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(My commission expires June, 1957)

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